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Telephony

THE JOURNAL OF THE
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SINCE 1901

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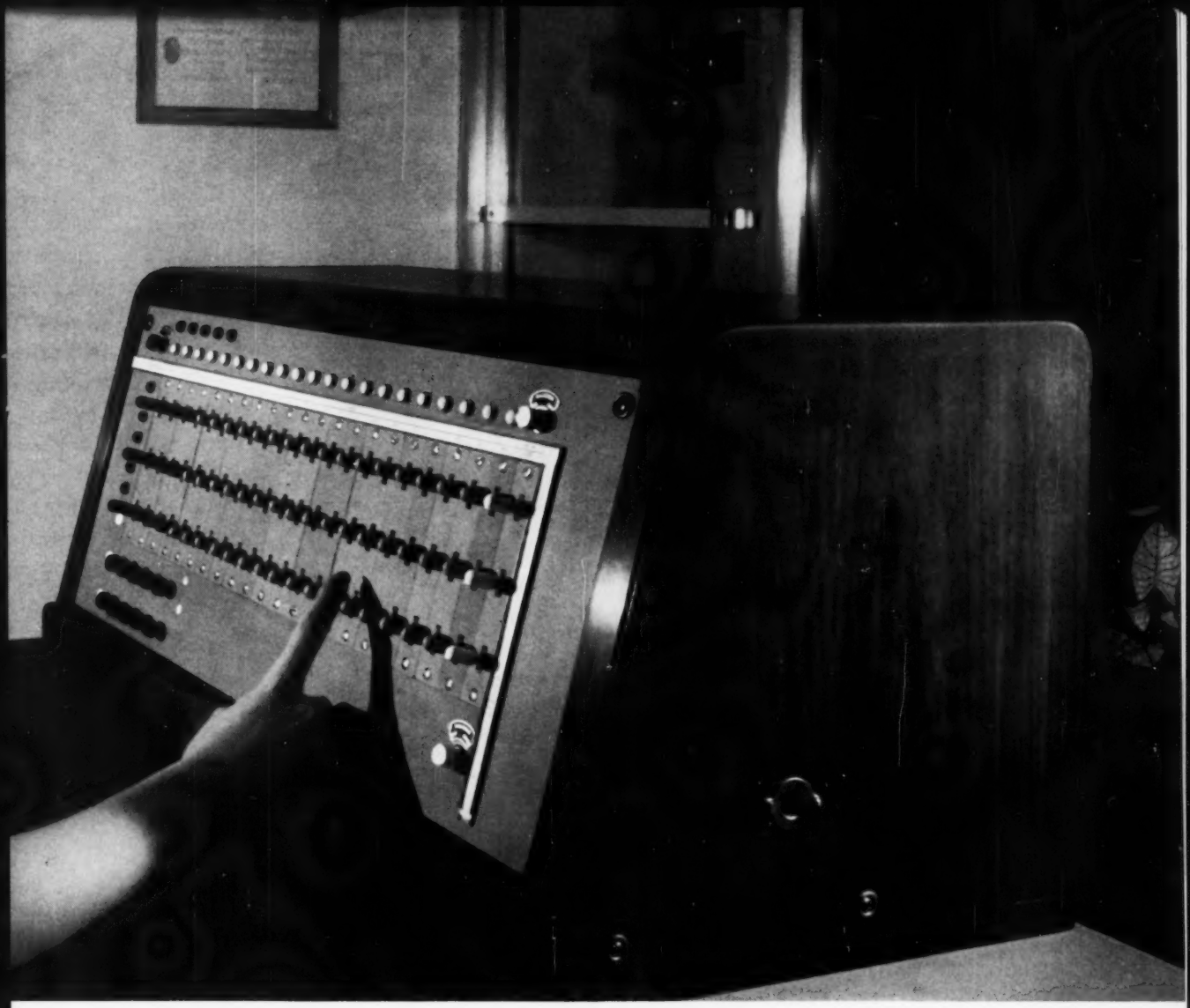
DOUBLE CABLE CAPACITY

R. S. Hawkins (left) and F. Lohmeyer of Bell Telephone Laboratories examine some of the equipment designed by Bell that will at least double the number of conversations carried by underseas cable. See story on page 38.

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

How to boost your profits and prestige



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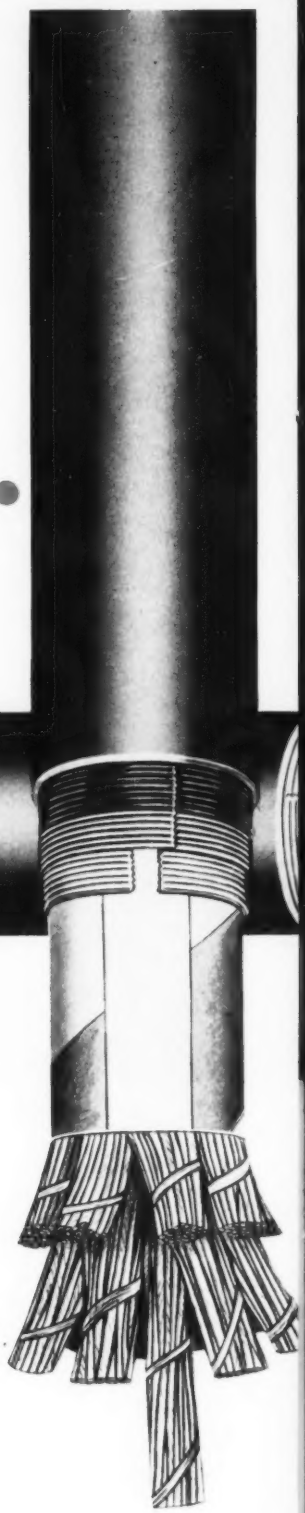

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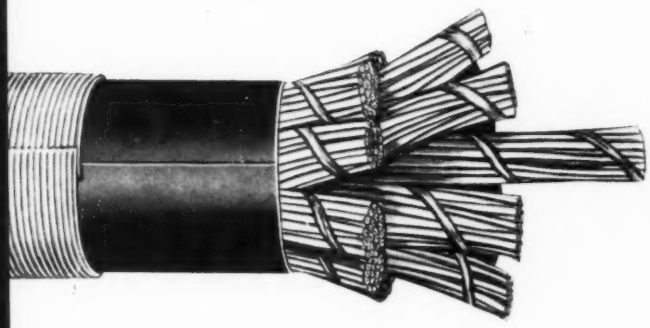

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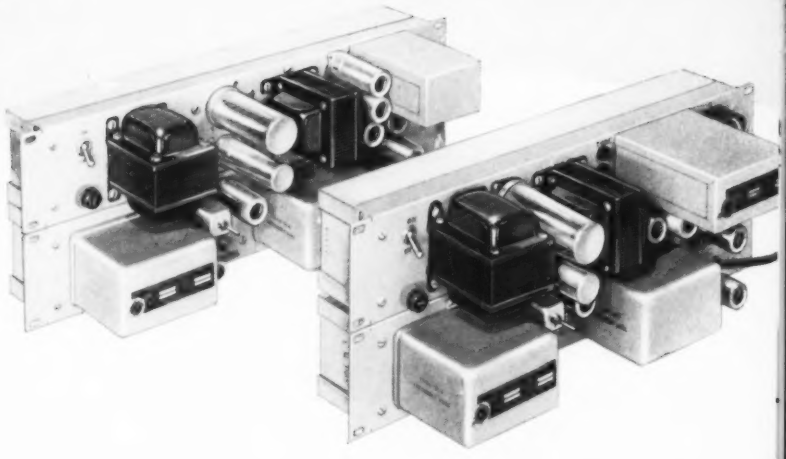

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FLASHES AND PLUGS

CAN'T AFFORD A FIRE, EITHER. A fire district in Centreville, Ill., reported recently it had no telephone service to its volunteer fire department.

A member of the executive board of the fire department explained that lack of funds necessitated the suspension of telephone service.

When asked how a fire could be reported, he said, "I don't know."

•

MONSTERPIECE. The marriage broker, via the telephone, had interested the prospect in a candidate he described as "a girl who looks like a picture."

Anxious to meet her, the client had the broker arrange a meeting at a local night spot.

But when he saw her he winced—cauliflower ears, nose like a bent fender, a hank of hair dangling over her head.

"I thought you said she looked like a picture," he growled.

"Either you like Picasso or you don't," shrugged the broker.

•

PASSING THE BUCKET. Newspaper offices receive some odd questions. A lady telephoned a New Haven, Conn., city editor, Edward Barthelmes, and asked:

"Could you tell me if a 10-quart bucket will hold $1,000 worth of dimes?"

Mr. Barthelmes is still looking for the answer to that one.

•

NO RIDES "FOR FREE." Recently, it was reported, a Colorado lawmaker discovered he was violating the state's constitution by making telephone toll calls at state expense, as well as getting free postage and stationery.

A contrite fellow, he said he was as "guilty as anyone else." He proceeded to estimate the cost to the state of such usage of the telephone and mail service at $14,000 a year.

He also commented that it is illegal for a lawmaker to collect full travel pay at the beginning of a legislative session, and reminded colleagues that the return trip doesn't take place till they go home to stay.

•

NEW VERSION OF "DIAL M." A Manhattan, N. Y. theater critic has been toying with play titles which, he thinks, may make them more appealing to Moscovites. He has contrived such titles as "Look Homeward, Engels," "Dark at the Top of the Steppes," "Marx's Millions," "The Hot Mikoyan," "Call Me Mischa," and now, his latest—"Dial M for Molotov."

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Since 1901

February 28, 1959

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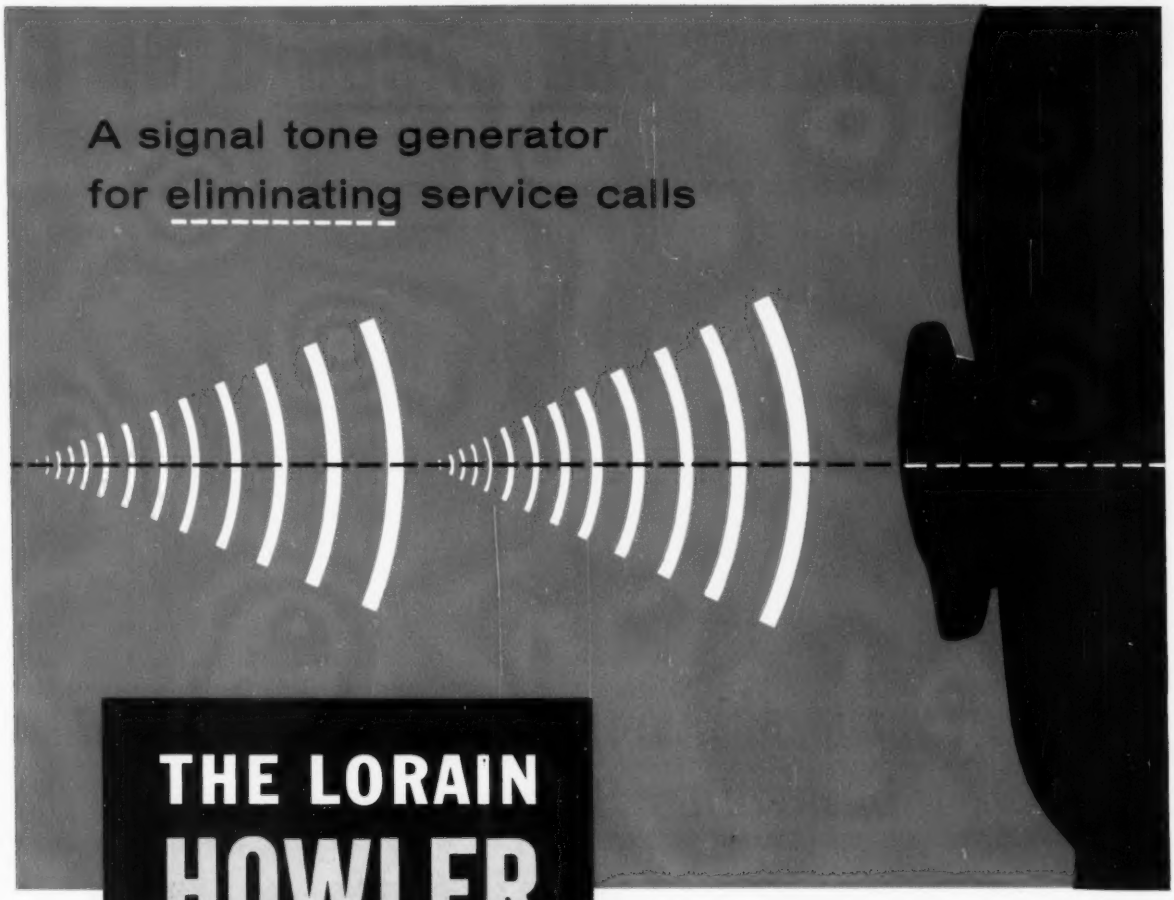
for eliminating service calls



THE LORAIN HOWLER

Write for Bulletin 167A

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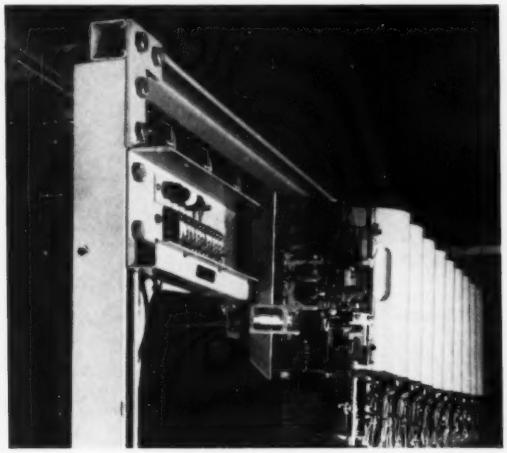
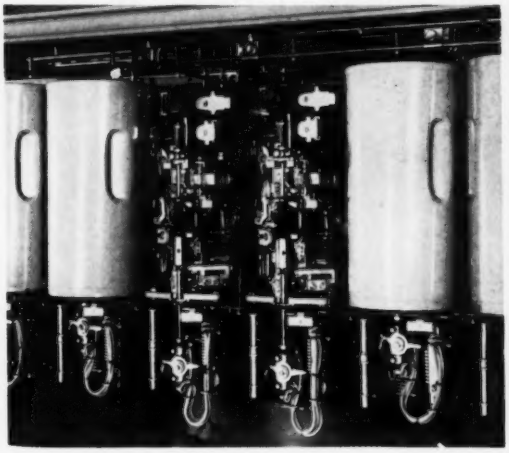
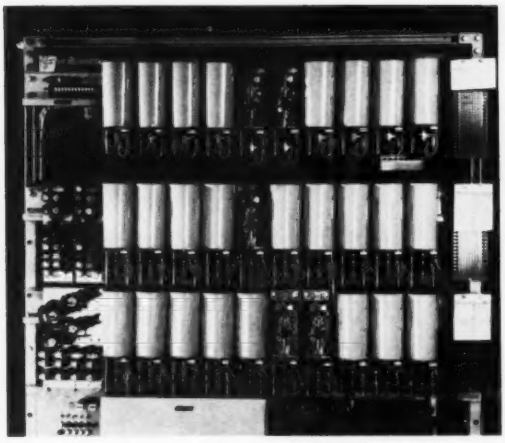


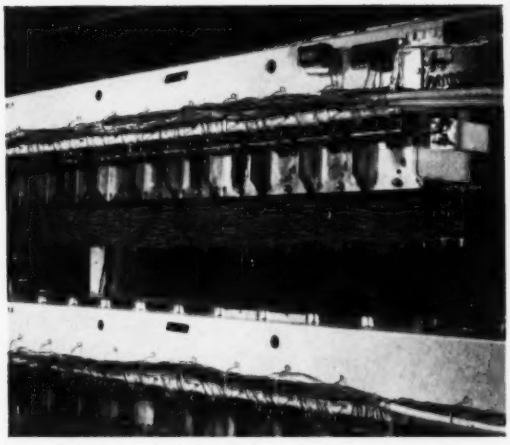
1—Bay framework lighter. Built up from Unistrut frames that permit any shelf arrangement. Framework smooth-finished, easy to maintain, durable, modern looking. Made from cold drawn steel.



2—Simplified circuit design cuts number of relays in all selector switches. Marked by vertical bank instead of post spring; simpler digit absorbing. All selector switches have faster-than-normal operation.



3—Linefinders also feature simplified design, with number of relays reduced to two and vertical bank eliminated. Automatic self-checking of linefinder and control circuits.



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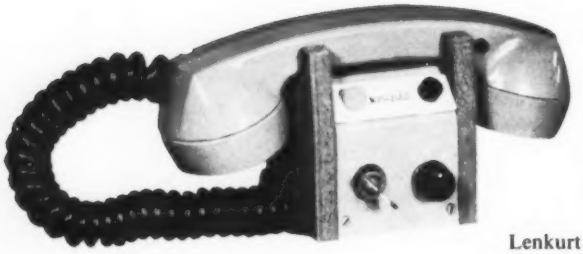

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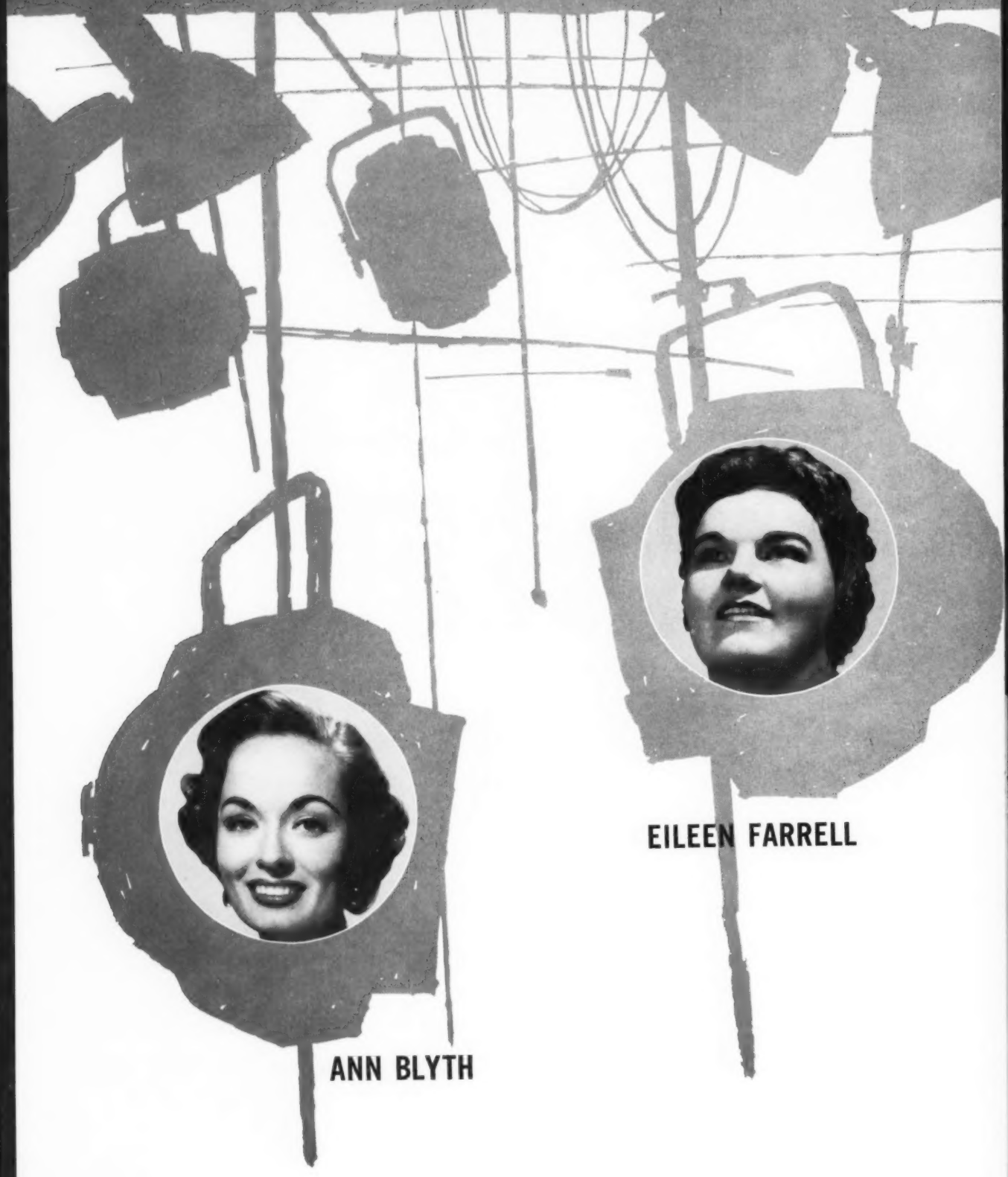

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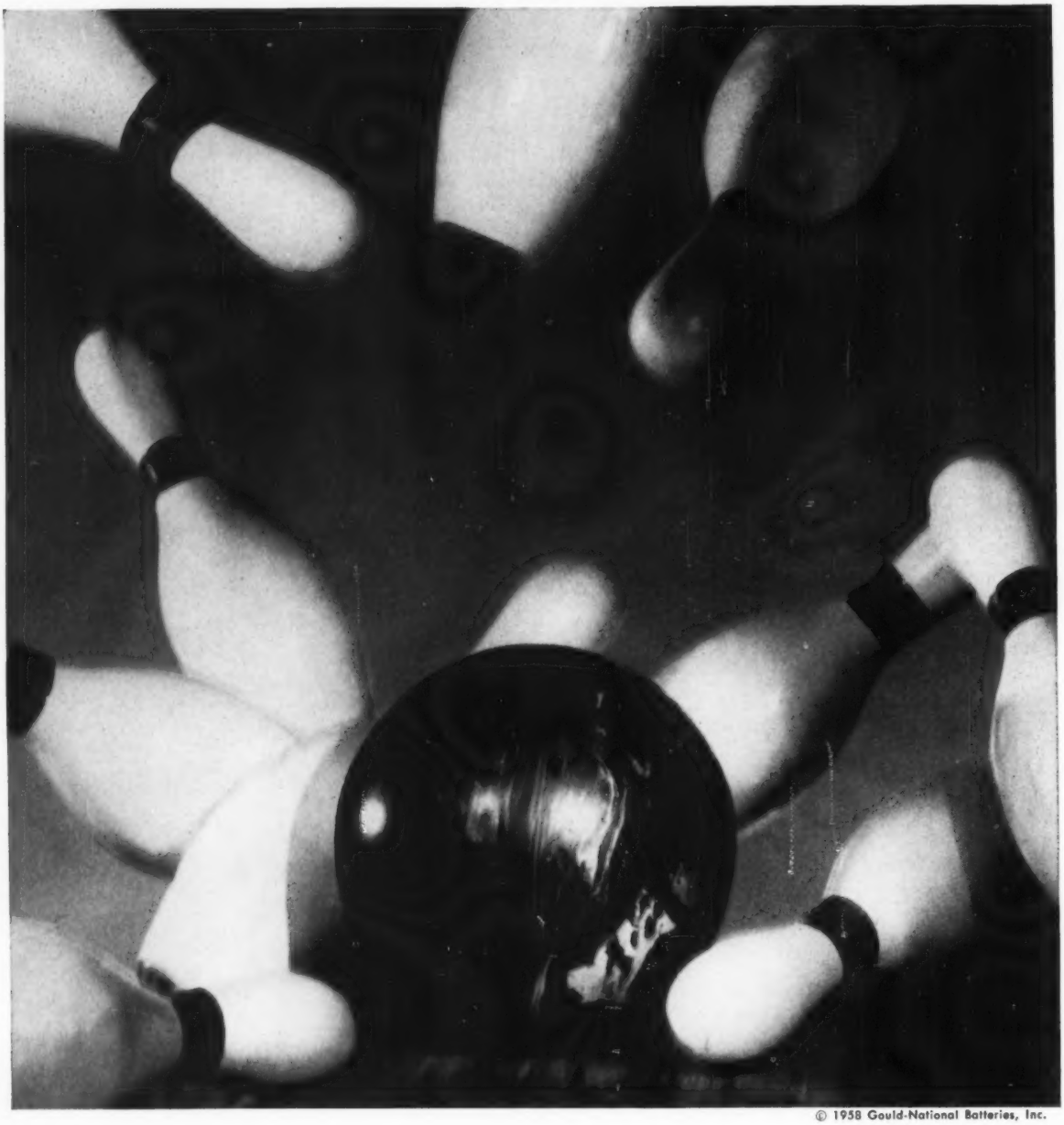

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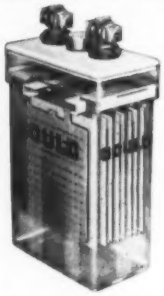

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Defense secretary asks Congress for authority to sell Alaskan Communication System (ACS) to private industry. Wisconsin senator to propose bill to replace FCC with panel of "life-time" judges. Reviews books of interest to utilities.

LAST WEEK Defense Secretary McElroy asked Congress for authority to sell the government-owned Alaskan Communications System. This has already been discussed in this department in connection with President Eisenhower's budget message. What was new about Secretary McElroy's request, however, was the valuation he put on the Alaskan Communications System, generally known as ACS. He valued it at 158 million dollars. And, he asked the House Armed Services Committee to recommend legislation which would permit the Defense Department to negotiate, without any advertising for bids, the disposal of "any or all" of the system to *private industry.*

McElroy revealed that the government has been trying to get rid of this system ever since 1913, but nobody seems to have been very much interested in acquiring it at the price the government thought reasonable. Obviously, any long distance landline communication system in Alaska requires not only large capital investment, but expensive and continued maintenance, with small potential return. But, now that Alaska is part of the Union and things are booming up that way, the defense secretary feels that the operation of a communications system ought to be financially attractive to private enterprise. Furthermore, he does not think that the citizens of the new state of Alaska should have to depend on the Army and the Air Force for their telephone and telegraph service.

Incidentally, the Air Force seems to have put up the lion's share of the federal investment. According to McElroy, the estimated 158 million dollars included 135 million dollars assigned to the Air Force, 20.5 million dollars to the Army and $2,700,000 to the Federal Aviation Agency. This does not mean, of course, that Uncle Sam expects to get his original investment if Congress approves the sale.

McElroy said that the selling price could only be fixed after "an impartial independent appraisal and subsequent negotiation." He promised that all communications industry interests in the United States would be canvassed (presumably both Bell and Independent as well as non-telephone communication interests). After that the attorney general would review the contract before the deal could be made final, just to be sure everything will be on the legal "up and up."

McElroy's reference to the sale of ACS naturally raised the question of whether Uncle Sam is trying to get rid of his other large public utility investment in that area—the Alaskan Railroad. This comes under the Interior Department. McElroy said that the Interior Department was not planning to get rid of the Alaskan Railroad communication facilities because these are "an integral part" of the railroad operation. So it would seem to follow that, as the tail follows the hide, Uncle Sam is planning to stay in the railroad business in Alaska for a while, anyhow. In fact, it is pretty hard to imagine high-spirited bidding for railroad property anywhere, these days.

Thumbs Down On FCC

Already the much badgered FCC has been asked to assume the usual position by its critics in the 86th Congress. The usual position for the FCC—going back more than a year—is over a barrel. The latest congressman to emerge with a big stick in his hand for the regulatory group is the junior senator from Wisconsin, William Proxmire. The main difference between Senator Proxmire and some of the earlier critics of the FCC is that he goes farther. In fact, he goes clear to the end of the car line. He would not simply reform the FCC, or cut it in half or little pieces. He would get rid of the whole thing, kit and caboodle. Instead, he would like to set up a specialized federal court.

On Feb. 11 Proxmire stated that he intends to introduce a bill which would require that radio, television, telephone, and other decisions under the Federal Communications Act be decided by a panel of from three to five judges. They would be lifetime appointees. The bill is not due for several weeks because the Wisconsin senator wants to fill in a number of important provisions which are still rather vague in his mind.

One of these points to be cleared up is whether he wants three *or* five judges. But, he is sure that he wants these judges to operate on a specialized basis—singly. Each judge would have a particular field in which he alone would make original decisions. In other words, there would be one judge for federal interstate telephone and telegraph matters. There would be another judge for television and another for radio. There would probably be two more for the other odds and ends which the FCC is now controlling.

Furthermore, these single judges would have final say in their own respective bailiwicks. If an unsatisfied party took an appeal, he would go direct to a U. S. Circuit Court of Appeals, instead of spending further time with all the rest of the judges, along the lines in which appeals from FCC examiners opinions are now taken to the full FCC *en banc.*

These judges, however, would only

take care of the judicial functions of the FCC. All the rest of the day-to-day routines and administrative business, such as inspections, reports, etc., would be wrapped up into a single package and put under a newly created Office of the Communications Administrator. Otherwise, Proxmire would leave the present FCC set-up about the way it is—or what would be left of it. By that is meant the hearing examiners and the bureaus and the staff. "I have heard no criticism of the commission staff," Proxmire said.

The basis for Proxmire's proposed ripper bill to murder the FCC out of hand is the sensational and unfavorable testimony about the commission brought out by the House Legislative Oversight Sub-committee last year. Proxmire said: "I feel very strongly that it is very essential that the enormously powerful decision-making functions of the FCC —which affects 10's of millions—should be handled in the most judicial way and should be insulated as much as possible from political pressure."

The Wisconsin senator reasons that by putting judges in charge of the FCC judicial functions there would be an end to attempts to bring pressure, or seek special favors, or otherwise improperly influence regulatory decisions. He takes the position that no litigant would even consider trying to use back-door influence on a regular judge. There have been rare instances, of course, where this has been attempted with some success. But, on the record, Proxmire has a point. What the Wisconsin senator seems to overlook, however, is the intrinsic nature of regulatory proceedings. To superimpose on the complex and essentially economic field of regulation the rigid concept of court procedure and rules of evidence would certainly not speed up the handling of such matters. Just how one judge in charge of television or radio matters before the FCC would ever get through the sheer volume of case load is a serious question.

If Proxmire alone were behind this proposal to bump off the FCC as a commission, the chances for final success in the present Congress would not be very impressive. It so happens, however, that Proxmire's idea is by no means a new one. And, it may be that his bill, when he introduces it, will get additional support, and very influential support, from none other than the chairman of the Senate Interstate Commerce Committee, Warren Magnuson (D., Wash.). About a year ago Senator Magnuson ordered his committee staff to draft a bill which would likewise have scuttled the FCC, as such. For some reason or other Magnuson never introduced his bill, but the essential provisions of the draft became known.

The difference between Magnuson's earlier proposal and Proxmire's later proposal is not too great. Magnuson would have established a double tier arrangement, whereby all FCC decisions would originally be made by a single administrator. Such decisions could then be appealed to a special three-judge court of appeals which would function exclusively in this field. Proxmire, on the other hand, would divide the FCC responsibilities horizontally — turning over administrative duties to a single executive officer and reserving the judicial functions for a panel of judges.

Magnuson is still critical, not only of the FCC, but other commissions as well. Early last month right after the new Congress assembled, he was quoted as saying, "We have just got to do something about those commissions." So it is probable that Magnuson will have his committee consider various kinds of ripper bills, including Proxmire's idea, and maybe some less drastic reforms. Magnuson, as chairman of the Interstate Commerce Committee, is in a position to get behind such legislation and keep pushing until he gets some action, one way or another.

Incidentally, over on the other side of Congress, Representative Harris (D., Ark.), chairman of the House Interstate and Foreign Commerce Committee, has announced that he will stay on as chairman of the Communications and Power Sub-committee of that group. That means that any such reform legislation which clears the Senate would have to come to Harris' group before House action.

Notes on Two Recent Books

What has been said, above, about doing away with the FCC certainly falls into the pattern of the proposals recently made in a controversial book published last week in New York by Alfred A. Knopf, Inc. The name of the book is "The Professor and the Commissions," and the author is Dr. Bernard Schwartz, New York University law professor who was fired last year as chief counsel for the House Legislative Oversight Sub-committee, after he had an argument with the chairman, Oren Harris (Dem., Ark.), over investigating practices.

Schwartz's book titillates the reader with a "now-it-can-be-told" approach which hints that deep, dark secrets of

(Please turn to page 42)

Convention Calendar

1959

Association	*Date*	*City*	*Hotel*
Iowa	Apr. 7 and 8	Des Moines	Fort Des Moines
Ohio	Apr. 13, 14 and 15	Columbus	Deshler Hilton
Illinois	Apr. 20 and 21	Peoria	Pere Marquette
Nebraska	Apr. 21 and 22	Lincoln	Cornhusker
Indiana	May 6 and 7	Indianapolis	Claypool
Wisconsin	May 13 and 14	Milwaukee	Plankinton House
Kansas-Missouri*	May 25 and 26	Kansas City, Mo.	Continental
Pennsylvania	June 1, 2 and 3	Buck Hill Falls	Buck Hill Falls Inn
California	June 3, 4 and 5	Los Angeles	Ambassador
Washington-Oregon*	June 11, 12 and 13	Seattle	Olympic
New York	June 15, 16 and 17	Schroon Lake	Scaroon Manor
Alaska	September	Anchorage	Unannounced
Tennessee	Sept. 9 and 10	Nashville	Hermitage
Arkansas	Sept. 14 and 15	Hot Springs	Arlington
Michigan	Sept. 15, 16 and 17	Grand Rapids	Pantlind
Rocky Mountain	Sept. 16, 17 and 18	Salt Lake City, Utah	Utah
New England	Sept. 21, 22 and 23	Bretton Woods, N.H.	Mt. Washington
USITA Annual Convention	Oct 11, 12, 13 and 14	Chicago	Conrad Hilton
Virginia	Oct. 29 and 30	Roanoke	Roanoke
Alabama	Nov. 9 and 10	Birmingham	Thomas Jefferson
Oklahoma	Nov. 18 and 19	Oklahoma City	Skervin
Florida	Nov. 30 and Dec. 1	Jacksonville	Robert Meyer

*Joint Convention

Telephone Communication

An Agent in the Development of Foreign Trade

By ALEXANDER I. WARRINGTON

THE TREMENDOUS complexities of foreign trade have been reduced to something understandable in de Haas' chart, *Chart 1* which presents the more important factors that make up the machinery of international trade.

Previous articles of this series (Jan. 3 and 10, and Feb. 21 issues) have indicated that at the turn of the Twentieth Century, time became a means of creating wealth and income by means of telephone communication. Large-scale manufacturing became a reality, and markets for American manufactured goods appeared throughout the world.

"Connecting links" and the "time variable" were briefly mentioned in the previous articles, and their significance became apparent in exporting. Here, for example, is an illustration of "connecting links" and the "time variable" in exporting manufactured goods.

De Haas' chart shows only the most basic agencies that enter export transactions. All of the agencies shown in the chart are interdependent on (1) one another, and (2) timing. A car manufactured in Detroit must reach New Orleans in time to be loaded on a ship destined for Australia, if Australia is the ultimate destination of that car.

In exporting, freight forwarders and steamship agents are about as essential to export procedures as the vessel itself. Current operations of freight forwarders and steamship agents require such a tremendous amount of rapid communication, mostly telephone calls, that about the only way to appreciate the daily drama in these and similar offices is to visit one of them. A battery of telephones, in almost constant use, makes one wonder why thousands and thousands of telephone calls are perpetually necessary for export transactions. It's not easy to clarify this situation without going into details that would prove cumbersome to follow. However, this hypothesis may illustrate how telephone calls are as necessary to modern exporting as the goods exported, and how telephone calls increase by multiplication rather than by addition.

If 100 exporters of manufactured goods use 10 freight forwarders and 10 steamship agents, the interrelationship in terms of unit communication becomes immediately apparent. If each

(Please turn to page 22)

EDITOR'S NOTE: This is a continuation of three previous articles: "Telephone Statistics: The Nation's Economic Stethoscope" (Jan. 3 issue), "Telephone Communication: Primary Agent in the Creation of Wealth and Income" (Jan. 10 issue), and "The Telephone Era Begins: And Large-Scale Manufacturing Becomes Immediate Reality" (Feb. 21 issue).

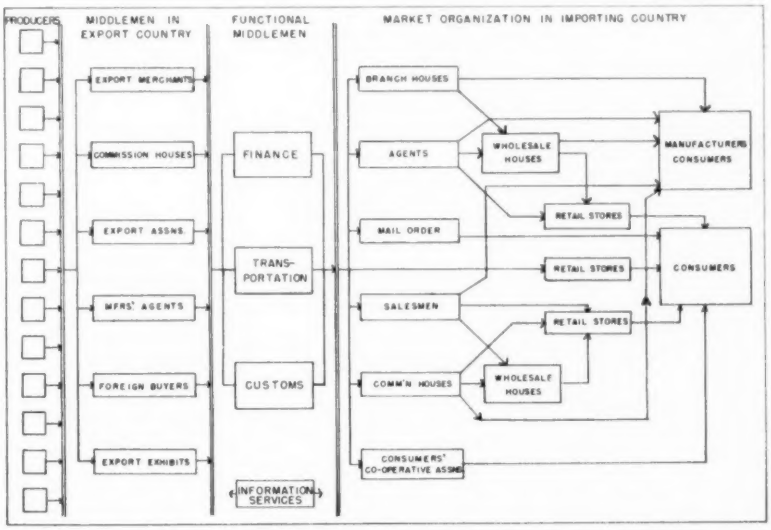
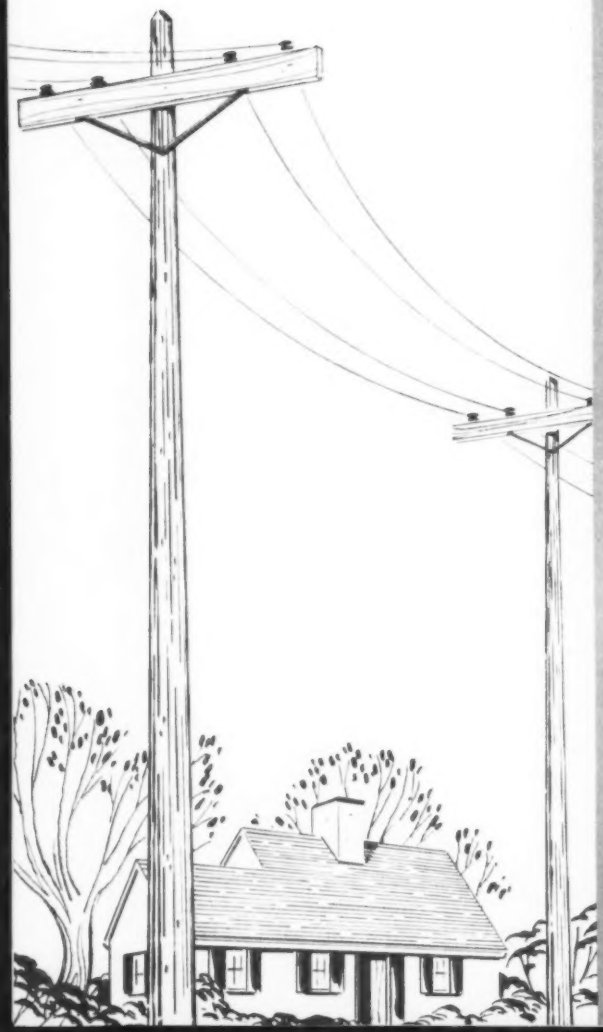


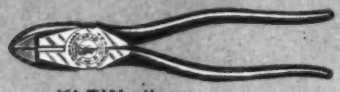
Chart 1. Organization of international market for manufactured products. Reprinted from "Foreign Trade Organizations," by J. Anton de Haas, Ph.D.—The Ronald Press, New York, N.Y.



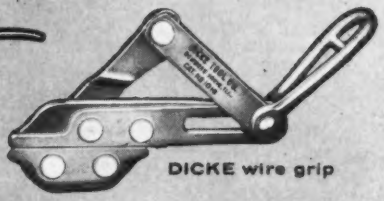
THOR heavy-duty drill

ARROW stapler

BUHRKE non-metallic bucket



KLEIN pliers



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CH&E water pump

COFFING hoist

DICKE block and tackle

ESTWING lineman's hammer

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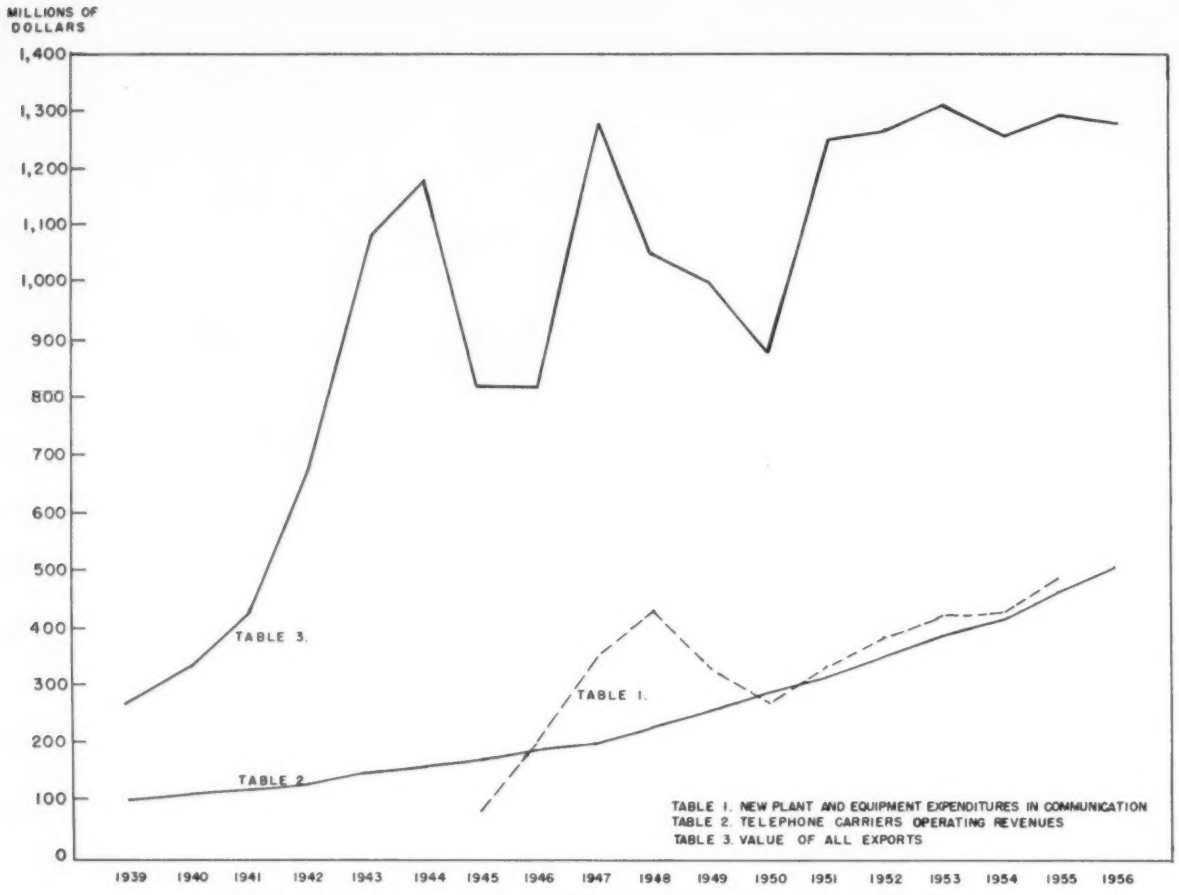


Chart 2. Value of exports compared with telephone revenues and expenditures.

of the 10 freight forwarders and 10 steamship agents deals with 10 separate agencies (insurance, trucking, guards, wharfs, etc.), the "multiplier" becomes staggering. Yet, only a portion of the necessary procedures are accounted for in what goes on from the time the preliminary work of loading a ship begins until the products reach their ultimate destination.

Business Indicators (See Table 1)

For the period 1939-56, the expenditure for new plant and equipment for all industries was 70.6 billion dollars. A reflection for a moment will give us an idea of what it has cost to bring us where we are industrially during the 1939-56 period.

In manufacturing, which transformed the United States from an agricultural to an industrial nation, the expenditure for new plant and equipment was 29.2 billion dollars or 41 per cent of all expenditures for all industries. Communication industries spent 4.3 billion dollars during the 1939-56 period.

If, as has been contended in this series of articles, the telephone has been responsible for bringing about large-scale manufacturing and international trade, there must be some kind of relationship between the expenditure for new plant and equipment in communication and similar expenditures for manufacturing plants and equipment.

The percentages shown indicate such a relationship and represent the percentage spent for communications in

Author Forms Research Agency

Mr. Warrington, the author of this series of articles, has long been interested in the telephone industry as an economic indicator. For a number of years he has made a special study of the economy of Southern United States and has written a book, "The Economic Geography of New Orleans and the Middle South" (Henry Holt, 1952), a scientific approach to defining metropolitan regions and market areas.

Recently he has established the Gulf States Research Agency, 234 North 11th St., Baton Rouge 2, La. for the purpose of supplying research services in the general fields of industrial economics, metropolitan regions, market areas, and community surveys.

New Plant and Equipment Expenditures			
YEAR	All Industries Total	Manufacturing Total	Communications Total
	(In Millions of Dollars)		
1939	1,378	486	76
1945	2,173	996	80
1946	3,712	1,698	204
1947	5,153	2,176	350
1948	5,515	2,284	436
1949	4,821	1,787	330
1950	5,151	1,873	276
1951	6,411	2,713	330
1952	6,623	2,908	384
1953	7,080	2,977	423
1954	6,707	2,760	429
1955	7,175	2,860	496
1956	8,770	3,738	N.A.

N.A.=Not Available.

Table 1. General business indicators.

YEAR	Total Revenue (Million Dollars)	YEAR	Total Revenue (Million Dollars)
1929	95.6	1943	147.7
1930	98.8	1944	158.9
1931	96.5	1945	173.1
1932	85.8	1946	187.9
1933	79.0	1947	200.4
1934	80.0	1948	229.4
1935	84.5	1949	255.4
1936	91.3	1950	288.0
1937	96.5	1951	318.1
1938	96.8	1952	353.3
1939	101.9	1953	386.2
1940	108.1	1954	417.0
1941	119.6	1955	461.6
1942	131.5	1956	507.8

Table 2. Telephone carriers operating revenues.

YEAR	Value of All Exports (Millions of Dollars)	YEAR	Value of All Exports (Millions of Dollars)
1929	436.7	1943	1,080.0
1930	320.2	1944	1,188.2
1931	202.0	1945	817.1
1932	134.2	1946	811.5
1933	139.5	1947	1,278.3
1934	177.7	1948	1,054.4
1935	190.2	1949	1,004.2
1936	204.6	1950	856.2
1937	279.0	1951	1,252.6
1938	257.8	1952	1,266.7
1939	264.7	1953	1,314.4
1940	335.0	1954	1,258.8
1941	428.9	1955	1,296.5
1942	673.2	1956	1,282.2

Table 3. Export of merchandise.

new plant and equipment compared to such expenditures in manufacturing:

1939	15.6
1946	12.0
1948	19.0
1950	14.7
1952	13.2
1954	15.5
1956	17.4

Is it possible that at long last something tangible has come forth which will serve as an economic weather vane?

There is no way of answering that question in this article, because the reader will demand something more than an opinion. However, the question will be presented to a number of universities and the results will be sent to TELEPHONY.

Telephone Operating Revenues (See Table 2)

The percentage increase (or —decrease) in revenue was as follows:

1929-32	—10.2
1933-36	15.5
1937-40	12.0
1941-44	32.8
1945-48	32.8
1949-52	38.3
1953-56	31.4

The increases in revenue shown above should take into account the tremendous expansion in service, covered in the previous articles in this series; and increase in revenue should not be confused with net profit.

When these factors are weighed, the enormous increase in telephone efficiency becomes apparent, and whenever there is an increase in the efficiency of anything pertaining to serving the public, it naturally follows that the public is getting more and more for less and less.

The quotation which follows is taken from "Tele-Communication," Herring and Guss, McGraw-Hill Book Co., New York (1936):

"No other development in the field of electrical communications compares with that of the telephone in universality and technical achievement. Next to the mail, it is by far the most important means of social communication, and the business uses are legion.

"The extent of the development is epitomized by the fact that all but a few of the telephones in the United States, located in almost 90,000 places, are interconnected, and that from Bell System telephones more than 92 per cent of all the telephones in the world may be reached.

"The technological improvements which have been introduced are too numerous to permit even enumeration. These have improved the efficiency of the telephone service and have adapted it to a multitude of communication needs.

"The bulk of this development has been the work of the Bell System, but much has been due to enterprising individuals outside this system who have contributed technical improvements and have developed and now maintain service in numerous small communities not served by the Bell companies.

"The universality of telephone service is markedly greater in the United States than in practically all foreign countries."

In the brief presentation of how the telephone creates wealth and income, it might now be added: More effective telephone communication results in the building up and general increase in wealth and income which is reflected in (1) manufacturing and (2) exports.

The relationships that exist between expenditures for new plant and equipment in communication, telephone carriers operating revenues, and value of merchandise exported by the United States are shown in the *Chart 2*.

The analyses and interpretations are left to the reader.

	Value of Merchandise in Millions of Dollars Exported to:					
YEAR	Africa	Asia and Oceania	Europe	North America Northern	North America Southern	South America
1929	10.8	69.6	195.0	80.1	36.1	44.9
1930	7.6	46.3	153.1	55.8	27.0	28.1
1931	4.9	35.6	98.9	33.6	15.5	13.2
1932	2.9	27.4	65.3	20.4	9.9	8.0
1933	3.5	27.2	70.8	17.9	10.5	9.5
1934	6.4	38.2	79.1	25.6	14.8	13.4
1935	8.0	37.6	85.7	27.4	16.8	14.5
1936	9.5	39.8	86.9	32.6	18.7	17.0
1937	12.6	56.5	112.3	43.2	26.7	26.5
1938	9.8	50.8	110.4	39.6	22.0	24.9
1939	9.5	53.4	107.4	41.5	25.3	27.4
1940	13.3	59.4	137.1	60.3	28.4	36.2
1941	42.0	62.3	153.9	84.3	42.3	43.9
1942	67.9	87.4	333.0	114.0	39.4	31.3
1943	125.6	117.2	634.7	123.2	45.3	34.2
1944	71.7	117.1	778.6	123.3	52.1	45.0
1945	43.6	100.2	457.8	101.2	60.3	53.7
1946	40.7	120.2	342.5	122.8	89.3	96.7
1947	68.4	220.8	472.5	177.5	142.9	196.1
1948	65.3	190.1	356.5	162.0	120.8	159.2
1949	51.8	204.2	343.1	163.0	116.0	130.1
1950	30.1	140.8	245.8	167.9	119.5	114.7
1951	48.3	207.1	336.4	215.6	141.9	172.3
1952	47.4	194.9	279.0	233.0	141.6	152.9
1953	41.9	181.4	239.4	249.6	131.4	126.7
1954	47.4	180.7	281.2	230.6	133.0	147.5
1955	49.1	194.9	347.1	267.5	141.7	135.6
1956	54.4	243.0	428.2	331.0	164.0	181.0

Table 4. Export of merchandise by geographic regions.

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WE HAVE RECEIVED a very interesting letter from H. H. Snelling, PBX repairman of Carson City, Nev. His letter states in part:

"We are a small exchange, fairly isolated, with maintenance force only. We do not have a reel trailer. It is our policy, if a subscriber desires buried service to have them dig the trench. We place the wire, they backfill.

"Even with this enviable policy, the placing of heavy-tape armored buried wire has been a chore requiring one man to pay out and another to pull.

"In addition, the wire was difficult to strip and terminate, and would not fit neatly through the grommets of standard protective devices. Recently we ordered a reel of B-service wire and a Roll-A-Reel."

Mr. Snelling explains that one man can now make an installation in a short time with this arrangement and that connecting the B-service wire to terminals is a comparatively easy task.

•

Our long-time friend, Archie Richey, has decided again to retire from the field of communications. He retired the first time from the Bell Laboratories back in 1951. Since that time he has been active as a consultant for the REA in Washington, D. C.

Archie has always been a strong advocate of the use of plastic cable and his knowledge and experience contributed much to the preparation of REA specifications for the manufacture and installation of this type cable. He will be missed by all of us, but we understand that his retirement home will be in New Jersey and we hope to see him from time to time and obtain his advice on our knotty cable problems.

•

On our recent auto trips through the South we noted that in several sections of the country old heavy leads of open wire are being replaced with small poles and one to three circuits. These circuits are loaded with subscriber's carrier so that even a greater number of channels are made available for use than could be provided by the old lead. This is good engineering practice, as better and more easily maintained facilities are made available than heavy open-wire lead. The small number of open-wire circuits and carrier also prove to be a real economy.

•

We recently received a letter from James F. Jones, of Dublin, Ireland, a retired official of the Telephone Engineering Department. He is the father of Noel Jones, who is now an employe of The General Telephone Co. of California.

Mr. Jones sent us a clipping stating that Irish post office engineers are planning a national dial-it-yourself network. First steps are being taken in Cork where a new dialing system is in operation.

•

The pressurizing of cable is rapidly developing into big business. We have had pressurized toll and trunk cable for years but only comparatively recently has it been determined that maintaining constant pressure on exchange cable would prove a good investment.

It is reported that Michigan Bell is spending over a half million dollars a year to pressurize cable in its system. By 1960 most of Bell's cable will be protected against moisture. Preventing trouble before it happens is extremely important when you realize that this company has more than 30,000 miles of aerial, underground and buried cable—more than enough to circle the earth at the equator.

In some cases, especially in small exchanges, it has frequently been observed that closing all sheath openings to pressurize cable would prove too expensive. With the use of dry air, supplied by a small compressor, it is not necessary to close all small sheath openings. This air is cheap and when a proper pressure is maintained, the escaping air from a small opening will prevent the entrance of moisture.

The latest thinking is to close the large opening and forget about the small ones, and it is probable that there will not be any serious, service-interrupting cable trouble.

•

In San Francisco, a woman reporter on the *San Francisco News* had a throat operation and the doctor instructed her to keep her voice down to a whisper while she was convalescing. This might have been easy for anyone else, but this lady spends most of her days on the telephone, calling from the busy and noisy *News* city room. Should she talk in a whisper, no one would hear her on the other end.

The problem was referred to Bell engineers who came up with the answer. They took one of the volume control telephones for the hard-of-hearing and switched the amplifier from the receiving end to the transmitting end. The reporter could talk in a whisper and her voice came out clear and loud at the other end. She soon regained her voice but this arrangement proved so satisfactory that the *News* has ordered six more of them for normal use.

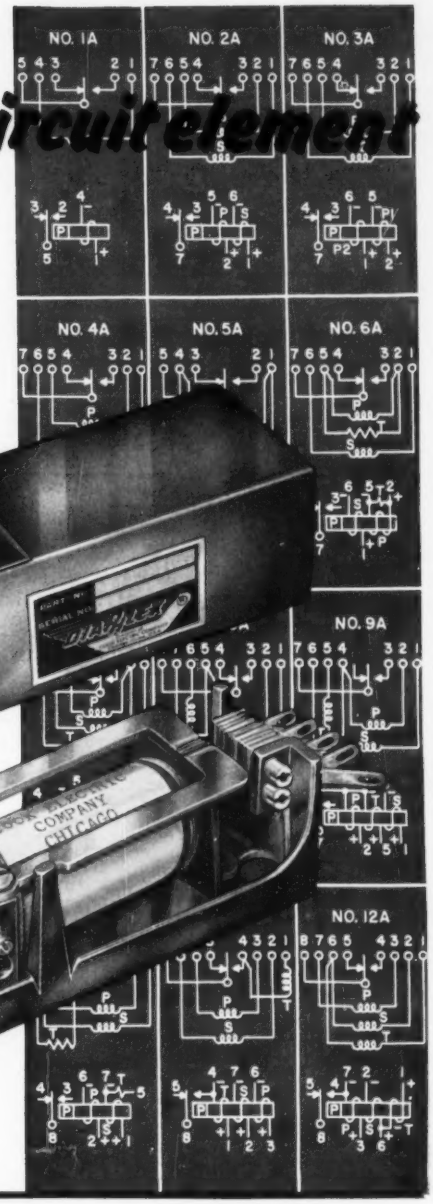
•

A new type of wire-spring relay, combining two independently operated relays into a single unit, which occupies the same space as that of a single wire-spring relay, has been developed by Bell Telephone Laboratories. Development of this new device is described in an article titled: "The 'Two-in-One' Wire-Spring Relay," published in a recent issue of the *Bell Laboratories Record.*

Although the "single" general-purpose relay has 12 contact positions available, many of the circuits in which it is or may be employed require contacts at fewer than six of these positions. Since, in the design of modern telephone equipment, space conservation, like time of operation, is "of the

a proved and accepted circuit element
used in hundreds of

TELEPHONE APPLICATIONS



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7

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essence," the logical decision was to provide a unit of two relays, each having five contact positions which fit in the same space required by the 12-position relay.

•

Out in San Diego, Calif., dialing irregularities are again plaguing customers. A publicity program aimed at improving the situation now is underway in employe publications and on bulletin boards, as well as in outside newspapers and magazines.

Employes are not only urged to dial correctly, but to spread the word to friends and neighbors. Everyone obviously gets more satisfaction from his telephone when he uses it properly.

The following suggestion is offered for correct dialing: look the number up, jot it down, dial carefully.

In this connection, we contend, as always, that the letter prefix in numbers is responsible for many wrong-number calls. When a change is made to all-numerals, with no letters, we predict that wrong-number dialing will cease to be a detriment to good telephone service.

•

In December, 1958 the Pacific Telephone & Telegraph Co. converted its last magneto exchange to automatic operation. The magneto era came to an end in California when Brown's Valley became a part of the Maryville exchange and the 35 customers in the valley traded their old magneto telephones for the modern 500 type sets.

•

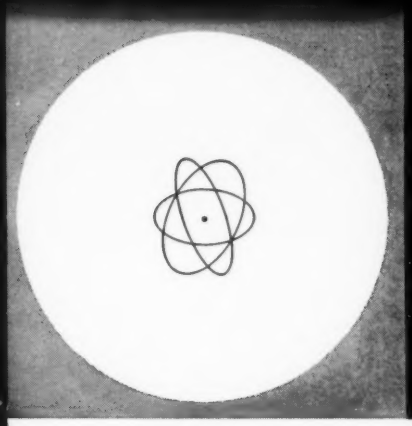
A new item that should prove popular with do-it-yourself fans who dabble in concrete, is a light-weight portable mixer that is powered by a 110-volt, ¼ hp. motor. This machine weighs 35 pounds, can mix a 50-pound batch of concrete in two minutes and sells for about $50.

•

Signs along the highway often prove amusing. Down South recently we noted one that read: "Don't pass stopped school bus." At a point where a two-lane highway merged into a single lane a sign stated: "Squeeze into one lane." A closed drive-in theatre carried this sign: "Closed until Spring. Reason: freezin'."

•

It is claimed, the only exercise some folks get is jumping to conclusions, running down their friends, sidestepping responsibility and pushing their luck.



TELEPHONY'S ELECTRONICS SECTION

BY HAROLD B. McKAY, ELECTRONICS EDITOR

LIAISON NEEDED BY ENGINEERS

". . . they shall speak with new tongues!"—St. Mark 16:17

NEW developments come along in electronics so fast these days that there is often little time to give them names. Even so, when a new device gets named, an engineer presents it in a paper before some society, and then he moves on into new fields. Very often the name chosen for a device or phenomenon is quite apt; in the inventor's mind it may exactly describe the new idea.

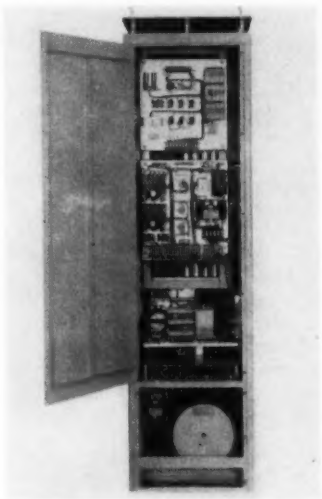
The trouble is, similar ideas have gone before, and previous names have been assigned to like phenomena. As a result, new words are constantly added to the language, which mean the same old thing. A peculiar result of this is found in the telephone field. A telephone man's lingo is a heritage which probably started in the railroads, was raised by the telegraph companies, was educated by electricians and plumbers (splicers), and was polished by the modern automatic system telephone worker.

At one time, all developments in the telephone field were made by telephone men who usually started with existing equipment with well-known names, and made improvements thereon. Actually, many of the features of electronics today are old stuff to the telephone business. Even the vacuum tube never amounted to much until it was used to make the transcontinental telephone line possible.

Today, most of the advances in electronics are being made in the computer, or guided missile, or other fields. Many of the new concepts developed by engineers in these fields ultimately are adapted to the telephone field. Also, many telephone techniques are adapted to these other fields. In fact, it is often difficult, on casual inspection, to tell a computer component from a telephone component.

A big trouble, however, is the language used by the telephone engineer and radio engineer. Both use the same parts, the same kinds of circuits, the same general techniques. But, they call them by different names. As a result, they sometimes cannot understand each other.

The telephone, like many early inventions, was invented by manual experiment, and probably many of the circuits which followed were designed the same way. Today, telephone and other electronic circuits have a great deal of scientific thinking behind them. A lot of mental work goes on before some mechanic gets the job of putting the thing together. New ideas are not usually given form "by guess and by gosh."



This looks just like a bay of telephone equipment. Actually it is a new power supply developed for computers.—Photo, courtesy of Bogue Electric Mfg. Co.

So, much of the language of electronics is the language of the thinking man. The terms are such that a trained engineer can quickly form a mental image of the function or circuit. While, once upon a time, a new circuit could be created by making several drawings and several experimental models, circuits can now be designed mathematically. By the use of modified Boolean algebra, a circuit can be designed that is mathematically correct—a circuit which uses the fewest number of contacts to do the job.

If a telephone man had a circuit in which two pushbuttons rang a single bell, he might think of the buttons as being a parallel circuit. In computer talk, this isn't the case at all. This circuit is an "or" circuit, because either one push button *or* the other will ring the bell. If the two buttons are in series, it becomes an "and" circuit, because buttons 1 *and* 2 must be pushed at the same time to get results.

It is still only a doorbell, but when spoken of in modern electronic terms, it becomes mysterious.

So it is with telephone equipment. If you regard a telephone exchange as a computer or electronic brain (which it is), then you must think of the dial as a "control device." While you just simply dial a telephone number when you want it, a computer must be "addressed" or given "commands."

A telephone office must be prepared to respond to the dial, and to

route calls according to the prefix called. The telephone man does this by simply running cross-connect jumpers. A computer, to be prepared to operate must be "programmed." The comparisons can be continued indefinitely. Two different words are often used to describe the same functions in the telephone field and in the radio-electronics field.

As more electronic equipment comes into the telephone plant, it brings its electronic terminology with it. At least, this will temporarily baffle the technicians who have to work on the stuff—until they learn both tongues. At worst, it may seriously retard entry of many progressive ideas into the telephone business. This can also be a barrier to equipment manufacturers' sales to telephone companies, simply because the telephone company won't understand what the manufacturers have for sale.

Another result of the different lines of thinking is a failure by engineers to utilize all available techniques in order to get the best results. For instance, mechanical equipment is not obsolete. In fact, it is still being improved. While new advances in transistors and other "solid state" devices make the headlines, manufacturers are still getting patents on improvements in their mechanical switching apparatus.

However, the man who has specialized in transistor technology may be unaware that certain parts of the circuit he is designing can be built much simpler and cheaper by using a mechanical switch. A Secode selector, for instance, can be set to close a circuit on any one or more of over 20 million dial pulse combinations. This switch is small enough to fit in the palm of your hand, and its price is similar to other telephone switches. A much larger and more expensive installation would be needed to do the same thing electronically.

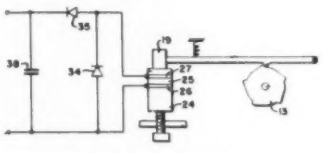
But, the radio engineer and the telephone engineer, in addition to speaking different languages, are often unaware of each other's equipment. Just as the radio engineer may not know when a mechanical switch will serve his purpose, the telephone engineer may not think of a vacuum tube or transistor as the way out of his dilemma.

Somewhere along the line, liaison of some sort is needed between the men in these fields. Engineers have difficulty in establishing such contact at their own level; in fact the engineering societies are moving in the direction of specialized groups. Perhaps it is going to be up to the manufacturers and the telephone companies to set up conferences where ideas can be exchanged.

One field alone will serve as an example—instrumentation. The telephone companies are among the largest users of instruments of all sorts, yet few manufacturers have cultivated this market. Often the companies have had to make their own instruments at higher cost. Yet it has been this writer's experience in contacting manufacturers, that many are unable to answer the question: "How can your equipment be used in a telephone office?"

POWER FROM CRYSTALS

THERE are many ways of generating small amounts of electricity, not the least of which is the telephone magneto. A new patent, No. 2,856,564, apparently goes the magneto one better. Instead of a coil of wire being whirled in a magnetic field, the new idea is based upon the piezoelectric effect of certain materials. This effect, noted in quartz, barium titanate and other materials, causes the material to bend or distort when voltage is applied to it.



Patent No. 2,856,564

The reverse effect is also true—if the crystal is distorted mechanically, it will put out a spurt of electricity. The new invention uses a piece of barium titanate, 25 in the accompanying illustration, which is mounted on a small anvil 24. A hammer, 19, is lifted and dropped by a cam 13. The cam may be driven by hand or spring.

When the hammer strikes, the crystal 25 is distorted, and sends a spurt of current into the electrical connections 26 and 27. This current charges condenser 38. When the crystal recovers after having been distorted, a pulse of reverse current results. This is quenched, and backdischarge from the condenser is prevented by the diodes 34 and 35.

The result of pounding the crystal is the build-up of a charge on the condenser which can be used for flashing a photographic gas discharge tube, triggering electrical detonators, or other purposes where a strong condenser discharge is needed.

The patent was issued to John W. Derwin of Washington, D. C.

INSULATION TESTING

FAILURES of electrical equipment can often be predicted by making periodic insulation resistance tests. Telephone companies do this now in the so-called wet weather tests during rainy weather.

However, even such well-insulated and protected devices as cables, motors and generators sometimes undergo a gradual aging which terminates in failure. A motor or generator warms up as it is run; the insulation heats and expands. When the machine is turned off, the insulation contracts. This constant

movement of the insulation might ultimately result in damage.

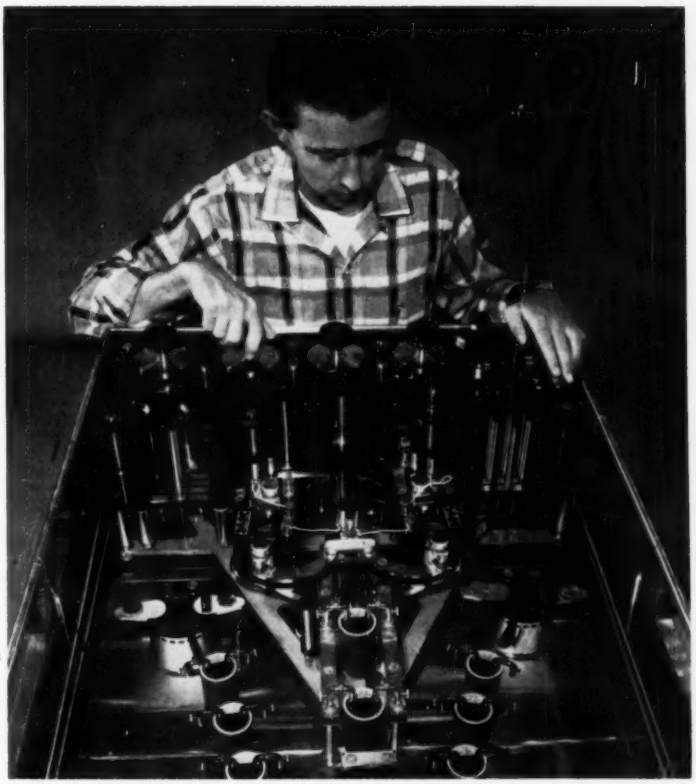
In addition, as a motor cools off, moisture from the atmosphere is drawn into the insulation around the windings; so is dust, lint and airborne particles of grease.

A method of anticipating trouble from these conditions consists of measuring the insulation resistance on a routine basis and keeping a record of each test. A gradual decline of the insulation strength may indicate normal aging. A sudden drop may predict a failure.

One of the devices used to measure insulation is the Vibrotest. It can be used to check the insulation quality on anything from an electric toaster to a transformer. You can get a specification sheet describing this instrument from Associated Research, Inc., 3758 W. Belmont Av., Chicago 18, Ill.

MOBILE DIAL RADIO

A NEW brochure describing radio dialing equipment for common carrier or private radio dispatch systems has been issued by the Secode Corp., 555 Minnesota St., San Francisco 7, Cal. The booklet describes different methods of signalling and discusses the application of this equipment to both dial and manual exchanges. You can get a copy free by writing to Secode.



A group of extremely accurate, sealed double-wall one-ohm standard resistors form the basis for resistance measurements made in the Electronic Calibration Center of the National Bureau of Standards. The Wenner Bridge shown here is used for calibrating these resistors.

WHAT'S A WATT?

THE fundamental system of electrical measurement now employed in the United States uses absolute units. These are units derived from the fundamental units of length, mass and time—the meter, kilogram and second. Basic electrical units are the absolute ohm and the absolute ampere. The absolute ohm is derived from the absolute henry. This in turn, is based on an inductor of accurately known dimensions.

The absolute ampere is established in terms of the magnetic force of an accurately dimensioned current-carrying coil, measured with a current balance. Other units, such as the watt, are obtained by combining the above units. Standards for these units are maintained by the National Bureau of Standards in Washington, D. C.

A new Electronic Calibration Center was recently dedicated by the Bureau at its laboratories in Boulder, Colo. Housed in a wing of the Radio Standards Laboratory, the center provides government, industry and the military with access to the nation's primary electronic standards.

The new building is made of concrete supported by caissons on bedrock to provide a vibration-free structure. Blocks of concrete set in sand beneath the building provide steady mountings for sensitive instruments. Several of the rooms are lined with copper foil, and a high capacity air-conditioning system holds the temperature and humidity within close limits.

The Center offers services in three broad frequency ranges, (1) Low

frequency, (up to 30 kc); (2) high frequency (30 kc through 300 mc); and (3) microwave (above 300 mc).

POWDER PATTERNS

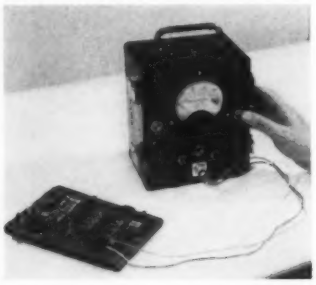
AN EXPERIMENT to illustrate magnetic lines of force consists of dusting iron filings on a magnet. This old demonstration is called to mind in a new method developed by Bell Telephone Laboratories for studying ferroelectric crystals.

Crystals of many types are today being used in telecommunications and other electronic applications. In order to get the best use from these materials, scientists must probe deeply into their structures. One of the things they must know is the domain structure — the areas in which electric charges will form.

Previous studies along these lines involved optical studies of some crystals and the use of an etching technique, which would show up surface characteristics.

The new method is almost as simple as the old experiment with the magnet. An electrostatically charged powder is put in an insulating organic liquid. When a few drops of this combination are applied to the face of the crystal, the charged powder is immediately attracted to the ferroelectric domains carrying an opposite charge, and covers their entire area. To test for negatively charged areas, powdered sulfur is used; red lead oxide is used to test for positively charged domains. One or the other of these powders is suspended in a fluid called hexane.

When the fluid evaporates, the brightly colored powder remains attached by its electrostatic charge to the area to be inspected. Positive and negative powders are applied separately so that they do not neutralize each other. The new technique clearly shows the electrical structure of crystal.



In-circuit transistor testing. The first transistor tester capable of checking the performance of transistors while they are connected within their circuits is shown in use at the Philco Corp. Government and Industrial Division plant in Philadelphia.

GAS DIODE SWITCH

THE cold-cathode gas tube, or "trigger tube," has been used with success for a long time in the telephone business. Perhaps most familiar is the application in which it is used as a relay to operate the correct party line bell in a subscriber's telephone set. Nowadays, there is a tendency to think of semiconductors whenever electronic switching is considered. However, the gas tube is far from obsolete, and Bell laboratories are experimenting with these devices for electronic telephone switching.

The gas diode has two stable states —one in which no current flows— and another in which a heavy current flows. The tube can be triggered from one state to the other by momentarily raising the voltage. This causes the gas in the tube to ionize in avalanche proportions.

Thus the gas tube acts as a switch. Until the voltage reaches the critical point, the circuit remains open, like the contacts of a relay. Once the triggering voltage is applied, the gas in the tube fires or "breaks down" and the resulting ionization causes a conduction path through the gas.

A full description of the gas tube and its properties is contained in the December, 1958 issue of the *Bell Laboratories Record*.

ELECTRONIC PAX

A FULLY automatic 20-line private automatic exchange was exhibited in the 1958 Brussels World Fair. The system handled four simultaneous conversations, and would process two calls at a time.

The switching units used were silicon diodes which were controlled by magnetic flip-flop circuits. No moving contacts or relays were used in the circuit, so the system was expected to have an indefinite life— with nothing to wear out.

The subscriber's set used with the system had a push-button keyboard instead of a dial, and an electroacoustical device, operated by a transistor, took the place of a bell. The silicon diodes used in the speech switching circuits can be switched from a blocking condition, whereby they are equivalent to a 1000-megohm resistor, to the conducting condition, where they have a resistance of only four ohms.

The equipment also used printed-circuit construction, which enabled the whole switching system to fit in a package 8.8 by 21 by 24 inches. The switching equipment used only 30 watts of power at 24 volts.

TEST FLASHLIGHT

TELEPHONE men often test out new jumper work, half-taps or other circuits by means of a battery and buzzer.

The circuit is usually arranged so that a clip can be connected to each end of the new wiring, and the buzzer will sound if the wiring has

been correctly placed. Electricians sometimes use a similar arrangement to "buzz out" or identify wires in buildings.

A handy gadget, made to order for such purposes, is a new flashlight made by the Ray-O-Vac Co., Madison, Wis. This flashlight has a telephone jack mounted in the rear cap where the batteries are inserted. A pair of cords, with a telephone plug on one end and clips on the other, comes with the outfit. When the plug is disconnected, the instrument is a regular two-cell flashlight, with plastic hanger and case.

Inserting the plug cuts the lamp circuit in series with the external cords. Shorting the clips together, or connecting them to a circuit which has electrical continuity, causes the lamp to light. The outfit can also be used to test fuses or other low resistance electrical equipment. It should be used only on dead circuits. If used on circuits which are connected to a voltage source, the flashlight bulb may burn out.

PRECISION RESISTORS

TEST instruments of various sorts often require "precision" resistors in their internal circuits. Voltmeters, ammeters and ohmmeters use such resistors. In the past, a tolerance of 1 per cent was classed by many as being equivalent to "precision." Now, however, the development of missiles has required tolerances much closer than this. Ultronix, Inc., of San Mateo, Cal., now makes matched resistor sets, which have absolute values of .01 per cent, and match the master resistor within ten parts per million. The resistors are encapsulated in an alkyd resin.

Although developed for the missile field, these resistors may have an application in such telephone measuring instruments as the Wheatstone bridge.

TALKING BOOKS

RECORD players used by the blind to play 16-2/3 rpm records of narrated books, are being made for the government by Stromberg-Carlson. The "Talking Book Players" are distributed by the Library of Congress to the blind.

FAST SWITCH

AN ELECTRONIC switch has been developed which will operate in .05 millimicroseconds. It is of the avalanche type and is made of an aluminum and silicon junction.

electronics training... the new way*

Almost everyone admits that the rapid growth of electronics has created problems for telephone men. The skills of yesterday are still important, but they must be augmented with a new skill . . . electronics.

How is your company solving this problem? Specialized resident programs can do the job, but they are expensive. Tuition costs, per diem allowances, transportation and salary for a minimum program can easily add up to $2,000 per man.

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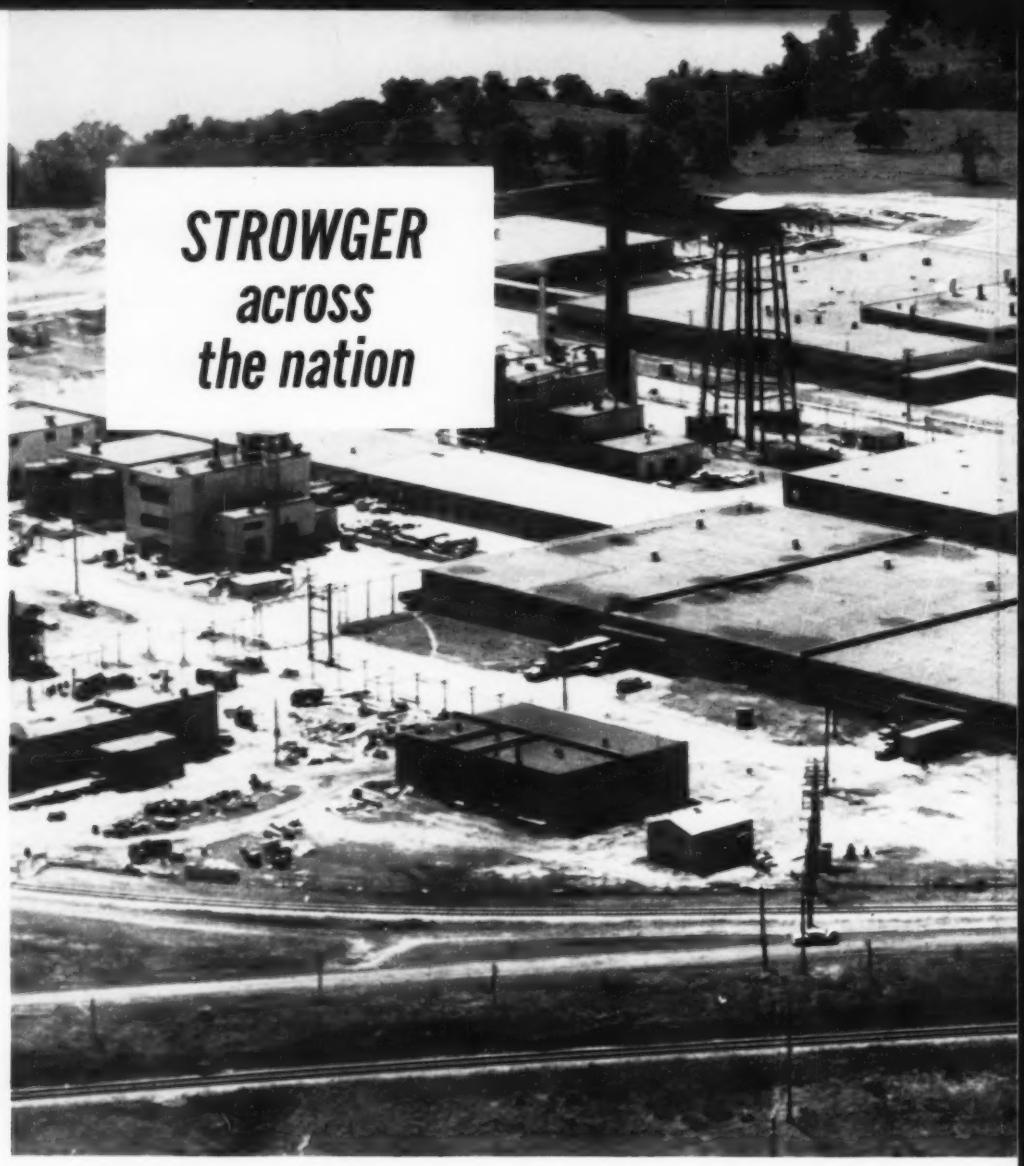

3-M PLANT (Minnesota Mining & Manufacturing Company shown at right) typifies the growth of industry in the Hastings area. Nearby is St. Paul Ammonia Products, Inc., Liquid Carbonic Corp., and the Great Northern Oil Company. To assure room for future growth, options are being taken by manufacturers on more farmlands.

HASTINGS, MINNESOTA

Manufacturers choose this century-old town on the Mississippi as the site for industrial development and shipping operations

On the Mississippi River, 20 miles southeast of the Twin Cities, is fast-growing Hastings, Minnesota. 1958 marked the 100th birthday of this community, whose colorful history is enhanced by its location on Old Man River. Until three years ago, Hastings was an agricultural and dairy center. Then, a new chapter began: *industrialization*.

On the outskirts of Hastings, a 6,000 acre industrial development is under way. Leading manufacturers have moved in to capitalize on Hastings' location on the Mississippi, its natural harbor, its fine rail, highway and air transportation facilities. With the boom, population has climbed to 7,300 and new home construction has set a record pace.

Hastings is served by Pioneer Telephone Company. Each day, Automatic Electric step-by-step switches work behind the scenes to give dependable, low-cost telephone service. Yes, Hastings is another success story of STROWGER ACROSS THE NATION.

GATEWAY TO HASTINGS is this magnificent bridge, which spans the Mississippi. Beautiful homes high above the river banks command a scenic view of the bridge and Hastings business district. Residents spend much of their leisure time boating and fishing a few miles from their homes.

PIONEER TELEPHONE COMPANY has 48 exchanges in Minnesota. Shown here is the Hastings exchange and business office. Hastings, which has a total of 1,430 lines, was converted to dial in October, 1957. Pioneer chose Strowger Automatic to make this conversion.

HEAVY BARGE TRAFFIC regularly passes through the Hastings locks, heading southward to the Illinois and Ohio rivers and the Gulf of Mexico. The Mississippi is the main shipping artery for industry throughout the Hastings area.

H. R. BOLLINGER (left), vice-president and general manager, Pioneer Telephone Company, describes growth of Hastings exchange since conversion to dial. The two interested listeners are Art Krueger (center), A. E. representative; and George Summerscales, Jr., A. E. district manager.

AUTOMATIC ELECTRIC

Subsidiary of **GENERAL TELEPHONE**

Courts and Commissions

PT&T Suit Challenges Oregon Rate Order

Parts of a rate order issued Jan. 12 by former Oregon Public Utility Commissioner Howard Morgan were challenged in a complaint filed in Marion County Circuit Court by the Pacific Telephone & Telegraph Co. (TELEPHONY, Jan. 31).

The company, it was reported on Feb. 17, charged that Commissioner Morgan's order on its application for rate increases had denied it any opportunity to earn a return on some 6 million dollars invested in intrastate facilities.

The complaint said Commissioner Morgan's action in disallowing $6,194,114 of the company's intrastate rate base and $423,328 of its intrastate expense was "arbitrary" and "unlawful" and resulted in earnings so low as to amount to confiscation of its property.

The company based the complaint on its contention that an arbitrary method was adopted unilaterally by the commissioner in apportioning the investment and expenses between the company's intrastate and interstate operations.

F. A. Dressler, vice president and general manager said, "The company in its recent rate application followed procedures established by the National Association of Railroad & Utilities Commissioners and accepted by the Federal Communications Commission.

"These procedures currently are being followed by the FCC and all state commissions except Oregon. They provide a fair and equitable method of splitting the company's investment and expenses between intrastate and interstate use."

Authorize Purchase of Five Oklahoma Exchanges

The Oklahoma Corporation Commission on Feb. 12 authorized the Cherokee Telephone Co. to purchase the Colbert and Yarnaby Telephone Cos. and the Calera and Achille exchanges of the Home Telephone Co.

Oklahoma Automatic Telephone Co. of Kiowa, one of two other companies seeking to buy or serve part of the areas under consideration, had options on the two Home Telephone Co. exchanges. The commission ordered that Oklahoma Automatic be reimbursed by the Cherokee company for the option money advanced on these properties.

The other company involved in the purchase hearings was the Win-Tel Telephone Co., Windom, Tex., which sought to serve nearly all of the Yarnaby area and part of the Achille area.

The commission decided that it would be in the public interest to avoid splitting up the territories in question, and to have the Cherokee company assume responsibility for the four exchanges.

Cherokee Telephone Co. is a new company; William O. Young of Ada, is president, and Royce E. Gauntt, vice president. Mr. Gauntt is also president of Chickasaw Telephone Co., Lone Grove, Okla.

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Shortly after the foregoing decision, the commission authorized the Cherokee company to buy the Bokchito Telephone Co.

Arizona Court Rules Rate Base Must Be Fair Value

The Arizona Supreme Court, on Feb. 11, ruled that the purchase price of a public utility does not legally represent its actual fair value for rate making purposes.

The court upheld a lower court decision which nullified rate bases and profit rate set by the Arizona Corporation Commission for Arizona Water Co.

The high court upheld a decision by Superior Court Judge Jesse Udall and sent the case back to the commission with instructions to determine the fair value of the properties, a fair rate of return and just and reasonable rates for the customers.

Arizona Water Co. purchased the properties from Arizona Public Service Co. in 1955 for a price the Supreme Court said was much less than the book value.

In giving its unanimous opinion that a utility's rate base must be based on fair value and that alone, the court said:

"The commission contends that a recent purchase price is market value and that market value would be fair value as a matter of law. We think not.

"It would be almost impossible for a public utility to have a market value as the term is commonly used, since such things are not routinely and commonly sold on the public market.

"But even so, there would be many elements and considerations involved in arriving at the price to be paid for a public utility which could be of no concern in arriving at a fair value."

The ruling said that a utility is not entitled to a fair return on its investment, but to a fair return on the fair value of its properties.

Since the purchase price as capital investment cannot be considered and since the considerations in arriving at a purchase price are not necessarily those elements comprising fair value, the court said further, "We hold that the purchase price of a public utility does not constitute, as a matter of law, its fair value."

Since the original ruling by Judge Udall, the commission set the fair value of the utility at a figure considerably higher than the actual purchase price and established a rate schedule based on the revised figure.

Lincoln (Neb.) T&T Gets 41% of Increase Sought

The Nebraska Railway Commission on Feb. 13 approved an increase of $886,558 in gross revenue for the Lincoln Telephone & Telegraph Co., or about 41 per cent of the amount requested (TELEPHONY, Aug. 23). The company had asked for $2,142,780 in its application of Aug. 11, 1958.

Vice President Merle M. Hale commented: "We are definitely disappointed that the full amount requested was not granted because we asked for what we considered to be a minimum in view of operating conditions and needs. Present rates were established five and one-half years ago, and since then we

To Raise the Derrick...
To Dig Pole Holes...
To Set Poles...
To Operate Winch...

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have had six general wage increases, and taxes and other operating costs have gone up sharply.

"Also, in this period, we have had to make net additions to plant and equipment of $16,451,288, an increase of 63.7 per cent. This year our construction program will cost $6,292,000 and further substantial additions will be necessary. A reasonable return on our investment is essential to attract investment capital required for the program of growth and improvements."

The effect of the order will be studied, Mr. Hale said, and a decision made as to further action the company may deem necessary.

The commission's order states that the amount of gross revenue approved will produce additional net earnings of $353,832. This will produce a rate of return of 4.18 per cent on the current value of plant, plus cash working capital, or a rate base of $52,361,961; or 5.85 per cent on the cost of plant in service, plant under construction, new buildings, materials and supplies and cash working capital, less depreciation reserve, or a rate base of $37,378,419.

The company serves 138,000 company-owned stations and 376 service stations in 125 exchanges in the southeast 22 counties of Nebraska.

Bell in Ala. Asks Rehearing Of 1954 Rate Request

The Southern Bell Telephone & Telegraph Co. on Feb. 13 asked the Alabama Public Service Commission to set the date for further proceedings in the company's rate case (TELEPHONY, Nov. 8).

The state supreme court on Oct. 30, remanded the case to the commission for further hearings, instructing the commission to establish fair and reasonable rates on the basis of the reasonable value of the company's Alabama properties. In earlier hearings, in which the commission decided against the company, the matter of whether rates were to be based on reasonable or original cost was at issue.

In a brief motion filed with the commission Feb. 13, Southern Bell said it would be ready by Mar. 17 with preparation of facts for the regulatory body in accordance with the supreme court order.

Southern Bell applied for increased rates in the state on Jan. 20, 1954 (TELEPHONY, Jan. 30, 1954). The commission denied the increase, and the Montgomery County Circuit Court later overturned the commission action. The commission then appealed to the supreme court, which remanded the case.

Meanwhile, the circuit court, on June 18, 1954, had granted the company permission to place the rates in effect under bond pending final settlement of the matter by the courts.

O. Company Gets Denial On Its Rehearing Plea

The Ohio Public Utilities Commission on Feb. 4 denied the Warren Telephone Co.'s application for a rehearing on the rate raise granted it on Dec. 19 (TELEPHONY, Jan. 3).

At that time, the company was permitted to raise its rates by $603,000 to provide it a 6.5 per cent return on a commission-determined rate base of $13,703,141.

The company had sought $924,499 in increased rates, based on a rate base estimated by it to be $17,361,337.

The company claimed that the commission erred in reducing its valuation and it attacked methods used by the commission in arriving at depreciation items.

Indictment of U. S. Citizens

"We have become too much a nation of lookers and listeners, a nation of spectators. Amidst the easy artificiality of our life, the plethora of substitutes for learning and thinking, the innumerable devices for avoiding or delegating personal responsibility for our opinions, even for having any opinions, the fine edge of our faith has been dulled, our creative powers atrophied."—A. WHITNEY GRISWOLD, *president, Yale University.*

Incorporate in Illinois

The Illinois Telephone Co., Springfield, has been issued a state charter of incorporation by the secretary of state, it was reported on Feb. 3. Incorporators are John P. Fixmer, Mary Agnes Wasilewski and Margaret Virco. Atty. Frank M. Pfeifer, correspondent for the firm, said the company will begin operations soon in the state, but not in the immediate central Illinois area.

Get Sale OK in Minn.

K. E. Giles, owner of the Deer River Telephone Exchange on Feb. 16 was given approval by the Minnesota Railroad & Warehouse Commission to sell the company to the Deer River Telephone Exchange, Inc., a corporation. The company serves 524 stations.

General of SE Given OK To Sell Stock and Bonds

The Georgia Public Service Commission on Feb. 20 granted the General Telephone Co. of the Southeast authority to issue 250,000 shares of its $10 par value common stock and 3.7 million dollars worth of first mortgage bonds.

The stock issue was sold to the company's parent corporation, General Telephone Corp.

The bonds, which are due Feb. 1, 1989, bear an interest rate of 5⅛ per cent and were sold to the following investment institutions:

John Hancock Mutual Life Insurance Co.
Aid Association for Lutherans
Connecticut General Life Insurance Co.
Connecticut Mutual Life Insurance Co.
Jefferson Standard Life Insurance Co.
Lincoln National Life Insurance Co.
Pilot Life Insurance Co.
Life Insurance Co. of Virginia
Wilmington Savings Fund Society
Woodmen Accident & Life Co.

The proceeds from the sale of the stock and bonds will be used by the company to repay temporary bank loans which were used in making additions to plant.

OK N. C. Financing Plea

General Telephone Co. of the Southeast, Durham, was authorized by the North Carolina Utilities Commission on Feb. 17 to sell to its parent company, General Telephone Corp., 250,000 shares of its common stock at $10 per share, its par value; and to issue and sell 3.7 million dollars worth of its 5⅛ per cent bonds (TELEPHONY, Jan. 31).

Vote Merger in Iowa

The Lost Nation (Ia.) Telephone Co. recently voted to merge with the Elwood Cooperative Telephone Association, it was reported by Lost Nation President Dr. F. S. Peckosh. It is expected that the merger will not be effective for several months.

Expand in Ecuador

The government of Ecuador recently signed a contract to expand the automatic telephone system of its capital, Quito, by 7,000 lines.

Need for Independent Spirits

"The drift toward conformity, security, and general avoidance of risk is a peril to our society. The idea of keeping one's nose clean has permeated all levels of our society. We need men with courage, more idealists, more zealots."
—MELVIN H. BAKER, *chairman of the board, National Gypsum Co.*

In Times of Change... depend on ANSONIA® Ankoseal® RURAL CABLES

to meet every changing requirement

Ansonia's leadership in quality and service meets the challenge of America's progressive telephone industry.

Ankoseal Rural Cables now being shipped have been modified as follows:

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All Ankoseal Rural Distribution Wire, including the popular 3-6-11 and 16 pair sizes, conform with new REA color coding.

PARALLEL LINE WIRE

Ankoseal Parallel Line Wire is manufactured as specified by the REA.

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THE ANSONIA WIRE & CABLE COMPANY

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"Leadership in Plastic Cables Through Quality and Service"

TASI Will Double Capacity of Submarine Cables

A NEW SYSTEM which will increase the number of telephone conversations carried by undersea cables perhaps by as much as two times is under development at Bell Telephone Laboratories. The system is called TASI, which stands for Time Assignment Speech Interpolation.

In a normal two-way telephone conversation, one person on the average will be speaking only half the time, and even while he is speaking, there will be significant gaps and pauses in his speech. Thus, if the two directions of transmission are separated, each transmission path is idle, on the average, more than half the time. If two conversations are interlaced to take advantage of these gaps, greater use can be made of existing transmission facilities. It is this interlacing process which leads to the designation, Time Assignment Speech Interpolation.

The system would not work with only two talkers on one line since they would frequently be speaking at the same time. However, where a larger number of channels is available, such as in a submarine telephone cable, an averaging effect occurs so that at any instant there is a greater probability of sufficient "free time" being available to accommodate the larger number of conversations. Increasing the capacity of a 36-channel system to 72 channels is more feasible with TASI than doubling the capacity of a five-channel system.

TASI is essentially a group of high-speed switches. If, for example, 36 cable channels were available, 72 talkers could be connected. When there are more talkers than channels, the equipment will connect talkers who become active by disconnecting talkers who are silent at that moment. In turn, this disconnected talker will be assigned another momentarily inactive channel when he starts to speak again. A talker will be disconnected only when he is silent.

When a talker starts talking, his voice actuates a speech detector. The speech detectors are scanned by a control circuit similar to a modern digital computer. When a talker becomes "active," this control circuit initiates a coded tone burst consisting of a group of four audio tones which precedes the voice over an available cable channel. After the tone burst, which lasts only 10 milliseconds, the control circuit connects the talker to the same channel. The coded tones operate switches to connect the talker to the proper line at the receiving end.

The tones are not heard since the listener is not connected while they are being transmitted. When a talker is not "active" and his channel is needed, another coded tone burst is transmitted over a separate signaling channel and severs the connection.

Switching of talkspurts from one channel to another is accomplished in a few milliseconds by a time-division switch. Speech is sampled for about two microseconds and the resulting pulses steered to the appropriate idle channel during the sampling by the selective operation of transistor "gates" in each channel. This short interval of sampling makes it possible to sample all active talkers 8,000 times a second and then reconstruct the speech from the samples before it is transmitted over the undersea cable.

The signaling system in TASI keeps the receiving end informed of the connections that the transmitting end has established. Four groups of audio tones are employed for signaling purposes—four tones in each of three groups and three in the fourth group. Each signal comprises one, and only one tone, from each group; if more or less are present, an error is indicated and appropriate steps are taken to correct it.

"Connect" signals which precede the voice signal at the beginning of the speaker's talkspurt are sent over the same channel as the speech. Disconnect and connection checking signals are sent over a separate channel used only for this purpose.

All of the circuits for TASI are completely transistorized. Terminals for doubling the capacity of the transatlantic cable will require several thousand transistors of four different types, and tens of thousands of semiconductor diodes and passive components.

Georgia Assembly Urges Repeal of Telephone Tax

The Georgia General Assembly on Feb. 16, urged Congress to repeal a 10 per cent excise tax on telephone service.

Both the state's senate and house approved a resolution offered by Rep. Downing Musgrove of Clinch asking that Congress take action on the matter during its present session.

The tax, which telephone companies pass along to customers, was enacted as an emergency war-time measure. Other states are reported already to have sent resolutions to Congress urging repeal.

General System Revenues Set All-Time High in 1958

General Telephone System set new all-time highs during 1958 in revenues, net income, per-share earnings, total assets and number of telephones in service, it was announced in New York on Feb. 19 by General's president, Donald C. Power.

System revenues exceeded 500 million dollars for the first time. Total revenues and sales amounted to 552.2 million dollars, an increase of 52.6 million dollars over 1957, or 10.5 per cent. Telephone revenues amounted to 322.7 million dollars, an increase of 33.6 million dollars over 1957. Net sales of manufacturing companies were 229.5 million dollars, which was 19 million dollars higher than the previous year.

Net income amounted to 50.8 million dollars for 1958, a gain of 5 million dollars over 1957.

Net income available for common stock amounted to 50 million dollars, an increase of 4.9 million dollars, or 10.9 per cent over 1957.

Per share earnings on common stock for 1958 and 1957 are as follows:

Shares of common stock outstanding	*1958*	*1957*
Average during period	15,338,000	14,778,000
Earnings per share	$3.26	$3.05
At end of period	15,741,000	14,864,000
Earnings per share	$3.18	$3.03

The System had total assets of 1.322 billion dollars at the close of 1958 compared with 1.175 billion dollars at the end of 1957. Including controlled affiliated companies total assets exceeded 1.552 billion dollars.

Telephones in service at Dec. 31, 1958 amounted to 3.6 million, an increase of 239,000 over Dec. 31, 1957. Including controlled affiliated companies total telephones were 4.1 million.

The General Telephone Corp. controlled but not consolidated affiliated telephone companies in Canada and the Philippines had revenues of 51.5 million dollars during 1958, and total assets of 230 million dollars.

True Government Instructs

"Which is the best government? That which teaches self-government."—GOETHE.

"Get the boys on the phone...

. . . we've found the missing link!"

Frank's command was almost reflex action, the culmination of nearly 12 hours of anticipation in which the only thought he and his colleague, Jim, had was, "Will this idea really work? Have we, at last, found the missing link?"

Only 12 hours ago they had been batting their heads against a stone wall, with the solution flirting just out of reach, always eluding them. Suddenly the answer had come, in—of all places—a car, tortuously climbing and twisting between the Pennsylvania hills.

It was the dead of winter. The two tired telephone engineers were returning from a trip to an XY® Dial exchange in western Pennsylvania. They had gone with high hopes for the success of a bold new idea; it hadn't worked out. Tense and guarded against the dangers of snow and ice, the men were trying to relax with conversation.

They could have talked about anything . . . the weather, women, basketball—but one subject seemed to come back again and again: this mutual problem they were trying to solve.

It was their responsibility to develop one phase of the telephone art superior in design to any approach previously considered by other engineers working in this field. The basic concept—toll ticketing — dated back to the 1920's, when telephony was not yet ready for this "revolutionary" idea. It was a different story now. The growing acceptance of this new facility was based on two important facts: the mechanization of switching equipment and the rising cost of manual operation. Telephone companies would be interested in toll ticketing if equipment feasible to their type of operation could be found. A design employing new principles was their assignment; the conversation centered around that.

A Look at the Past

Beginning as engineers do, by careful analysis of the facts, the two men started by reviewing what they knew about toll ticketing and its existing problems. Each succeeding problem, as it was brought to light, drew them closer to their goal . . . for they had the advantage of being able to look back at what had already been done—see its good points and its shortcomings.

"Didn't they use relays for memory back in the '20's . . . for storing information?" Jim asked.

"Yes, that's right," replied Frank, "but they cost too much; besides, they were slow and it took a warehouse-full to do the job. Then somebody thought of paper tape. One reel for each line. Load up the equipment, let her run, then unload after the reels were used up . . ."

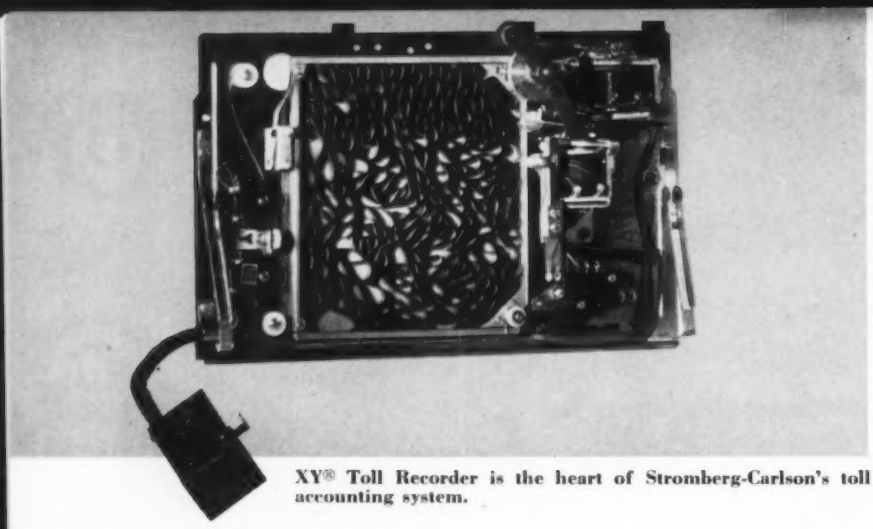
A "Reel" Problem

"Sounds like an old player piano," replied Jim. "I remember them—liked the music but it was no fun jumping up and down to change the reels."

"Funny that no one's tried to figure out a practical way to avoid loading and unloading reels," said Frank. "That's where we'd really be in the park. If we could find some way to eliminate handling reels — you know, help the operating company cut labor costs, and not have those miles and miles of paper tape to pay for and contend with."

Jim was following this same thought in a slightly different way. After a moment . . . "That outfit that makes an automatic typewriter tried magnetic tape—like an audio tape recorder — for duplicating the common portion of letters. I suppose they went back to

It started in a car that was twisting its way through the Pennsylvania hills.



XY® Toll Recorder is the heart of Stromberg-Carlson's toll accounting system.

paper tape because magnetic tape moves so fast, and they found they were still using miles of the stuff to do the job."

Finding the Answer

Almost simultaneously they turned, looked at each other and blurted out —"Why NOT magnetic tape?"

"Well, why not? What the heck is wrong with us? Here we are, both of us working for Stromberg-Carlson. Our magnetic research boys are way out in front in the magnetic recording field. They've proved that we can record pulses on tape; but of course tape has to be moving."

Each one, in his own mind, was reviewing the exclusive advantages of using magnetic tape. It could be used over and over again . . . material costs were bound to go down . . . magnetic tape recorders could be started, stopped, played back and erased by just pushing buttons . . . truly automatic operation . . . labor costs could be lowered even further. So far, so good . . . or so they thought.

Again it was as if there was a telepathic transfer of thoughts . . . they both sensed something was wrong. Their whole concept of using magnetic tape was again beginning to crumble because of this one flaw: under any known system, recordings were made while the tape was moving past the recording head. Even though the tape could be used over and over again, large amounts would be involved to record a day's traffic. Suddenly . . . material costs, instead of going down, were going up!

A New Approach

No one quite recalls who actually said it, because the question was so obvious:

"Why can't we record while the tape is standing still?"

"Has it ever been tried before?"

"I don't know, but is that any reason why it can't be done?"

Suddenly the car picked up speed as if in response to the conversation, now *really* spirited. It was as if they wondered why they hadn't thought of this before; it was a natural.

"Assuming that this could be done, this means we could stop the tape to record each pulse. Then we would move the tape slightly to record the next pulse. . . ."

The car lurched forward with increasing speed.

"We certainly can't prove it here—we're going to have to wait until we get back to the lab. Let's try it the first thing tomorrow morning. And take it easy on that accelerator!"

The following morning the two men —a little bleary-eyed but still enthusiastic—met in the lab to test their theory. The setup was easy. One man moved the tape manually as the other applied a pulse to the recording head. With bated breath, they rewound the tape, pressed the playback button and looked at the oscilloscope. The recorded pulses were there . . . sharp and distinct . . . it could be done! Their shout could be heard throughout the lab.

"Get the boys on the phone; we've found the missing link! Have them come down here at once! I want to get their ideas."

Operation Brainstorm

The other members of the team—a mechanical engineer and a circuit man —were given a quick review of the thinking and what had been accomplished up to this point. The tape was played again. As the newcomers saw the pulses on the oscilloscope screen, they, too, were gripped with the same excitement.

"I can't believe it!" said Howard; "how did you do it?"

"We moved the tape into position manually and recorded each pulse as the tape was standing still. Now, can we figure out how to do this automatically?"

Everyone was deep in thought. The mechanical engineer crossed the room, returned with a familiar piece of telephone apparatus.

"Have you thought of using a stepping switch to move the tape?" He held it toward them.

The pieces began to fall into place. A stepping switch . . . an XY Universal switch, stepped by the pulses of a dial. It was almost as if it were planned. A Toll Ticketing Recorder, using magnetic tape, designed to fit into the base of an XY switch.

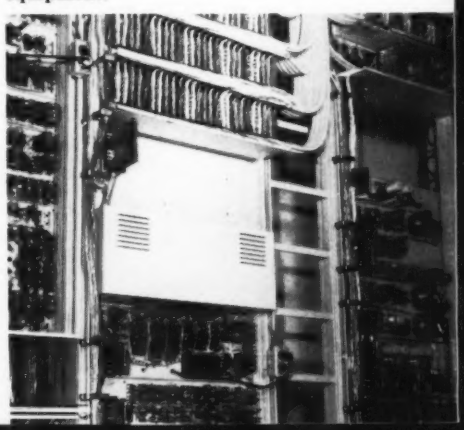
Hardware Coming Up

At this moment theoretical research was shoved aside; development was underway. Within a few months a complete system, utilizing to the fullest extent all the principles and benefits of magnetic tape, had been designed.

The true measurement of its success is just now being realized, as operating companies across the United States express their enthusiastic acceptance of this unprecedented toll ticketing system . . . a system which has brought automatic billing of long distance calls within reach of small as well as medium-sized companies, through the inherent economies of magnetic tape. These companies learned that strong, low cost magnetic tapes can be used over and over again; this *truly* automatic tape recorder eliminates the manual handling of costly paper tapes—gives them the time-saving advantages of automatic playback and direct readout. The use of electronic recording techniques minimizes maintenance, through the elimination of mechanical motion and wear; micro-spacing of pulses on the tape allows all calls, including incomplete calls, to be recorded economically and read out for permanent use in traffic analysis.

Several years—and many additional men—have added new features which meet the changing patterns of long distance telephony. But basically the electronic toll ticketing system of today goes back to that wintry night's ride through the Pennsylvania mountains.

Typical bay of XY Toll Ticketing equipment.



Advertisement

IT'S ONLY A DREAM, BUT . . .

IT'S TOO TRUE TO BE GOOD

IMAGINE YOU ARE PRESIDENT OF AN ELECTRIC COMPANY AND DREAM YOU'RE A TELEPHONE MAN

YOU ARE PRESIDENT of an electric company. You wake up suddenly one night, beads of sweat beginning to dot your brow. You dreamed that the electric company was suddenly transformed into a telephone company.

And now you do have troubles! First, all the many appliances that make up your diversified usage—washers, radios, irons, electric ranges—have now been replaced by just one appliance, the telephone. Your vast prospects for load building are constricted. Hundreds of manufacturers of electrical appliances and thousands of dealers promoting appliances using your product have disappeared. You, alone, must promote what you have left.

Second, your costs increase. Your wage bill, representing 20 per cent of electrical operating revenues, has soared to 40 per cent. You lose the advantage of the part of your expenses represented by fuel costs. This expense automatically goes off, in the electric business, if your usage falls. Furthermore, it is protected against inflation by fuel adjustment clauses.

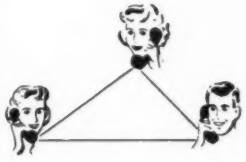
Third, you are trapped in the spider web of increasing costs. As the number of telephones increases, so does the cost per telephone.

The hair at the back of your neck begins to prickle. You realize thankfully, that it was only a bad dream. But sound logic compels you to agree that you certainly would want a higher rate of return, if your electric company became a telephone company. It would be necessary to allow for the less attractive nature of the business.

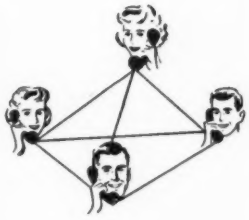
•

Reprinted from *Illinois General News*. The *News* excerpted it from a speech by John F. Childs, vice president of Irving Trust Co., New York, before the 1957 convention of the United States Independent Telephone Association.

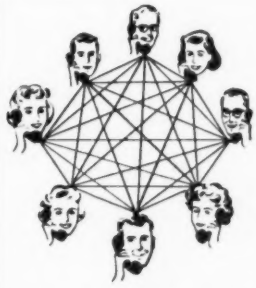
It takes one connection for Sally to talk with Bill.



It takes three connections for Sally, Mary and Bill to talk with each other.



It takes six connections for Sally, Mary, Bill and Jim to talk together.



It takes twenty-eight connections for Sally and her seven neighbors to talk together.

A relatively small increase in the number of telephones served by a central office may mean an enormous increase in equipment—more and more wire, more hand-made connections, more switchboards, and more dial equipment. This means more dollars worth of equipment per telephone. That's one of the reasons why, as a telephone system grows, it costs more to provide the service our customers have come to expect.

IN THE NATION'S CAPITAL

(Continued from page 18)

the sub-committee files are being revealed in the public interest at this late date by the author for the first time. There is no other explanation for Schwartz's sharp criticism of Representative Harris, House Speaker Rayburn, and several other members of the House sub-committee.

On the merits of the investigation, the New York City professor emerges with a low opinion of federal commission regulation. He would supplant it with a special court system, somewhat along the line indicated above by Senator Proxmire for the FCC. Schwartz would scuttle all of the "big six." He does not give any real reasons why the commission form of regulation, in itself, is not workable, or could not be made so, with a more dedicated and competent group of appointees, assisted by more widespread regard for canons of ethics on the part of both the practicing bar and the regulated industries.

The "new broom" argument seems to be Schwartz's principal justification for proposing the substitution of judges for commissions. He says in his book that "moral rot" has progressed to such a point in most of the "big six" regulatory agencies that a "truly drastic solution is all but imperative." He appears confident that lawyers, radio license applicants, and other regulated interests would not dare to approach judges. It must be admitted, of course, that there have been proven instances where they did approach commissioners, and in an improper way.

Schwartz's proposal for the creation of an administrative court to handle all regulatory matters is parallel with suggestions by the second Hoover Commission on Governmental Reorganization in 1955. Schwartz was a consultant for that group at that time. A similar line was taken by a committee of the American Bar Association.

The New Yorker does not think there is any sense in trying to rebuild, over the present basic structure of the regulatory commission, with reform legislation amending such laws as the Federal Communications Act, Natural Gas Act, Federal Power Act, etc. The foundation and supporting timbers are too rotten in his opinion. He would sweep them all away and start from the ground. He states: "Enough has been revealed to indicate clearly that improper influence abounds in those agencies. Only by abolishing the present commissions and transferring their decision-making powers to true judges can the problem of influence be completely solved."

Schwartz's version of the argument he had last year with Representative Harris is to the effect that Harris sought to prevent an honest investigation of complaints that he (Schwartz) presented. The author lists 17 TV license cases which he thought the subcommittee should have investigated, and certain other irregularities which have not been investigated. These include a reversal of a Civil Aeronautics Board examiner's award of a New York-Mexico City airline route in which the law firm of Thomas E. Dewey had been retained by the winning airline. Former Governor Dewey of New York last year denied any wrongdoing in this case.

House Speaker Rayburn is accused of collaborating with Representative Harris in trying to narrow the investigation and repress disclosure. The author gives his own ideas as to what ethical rules and practices should gov-

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ern the regulation of industry and other interests now subject to federal commission regulation.

While it must be admitted that there was enough odor arising from the House Legislative Oversight Sub-committee disclosures to confirm Schwartz's charges that there was something rotten, it does not follow that his proposed remedy is either justified or workable. Granted that a strong dose of reformatory disinfectant might be needed, the complexity of the economic regulation still requires a certain amount of elasticity and informality which would not be possible under courtroom procedure with judges sitting on the bench.

Another book published last week in New York (St. Martin's Press) is well worth the attention of public utility people of all kinds in the United States. It is "Nationalization in Britain" by R. Kelf-Cohen (310 pages, $5.50 per copy). Kelf-Cohen started out as an Oxford undergraduate to follow the star of public ownership, which he idealistically thought was vastly superior to the "degenerate capitalism" which prevailed among British public utilities during his youth. He later became an official in the British Labor Party's Ministry of Power. As such, he had a grandstand seat for the spectacle of British nationalization of coal, transportation, gas, electricity, and the reverse play on iron and steel. The British telephone industry had already been nationalized before Kelf-Cohen graduated from Oxford.

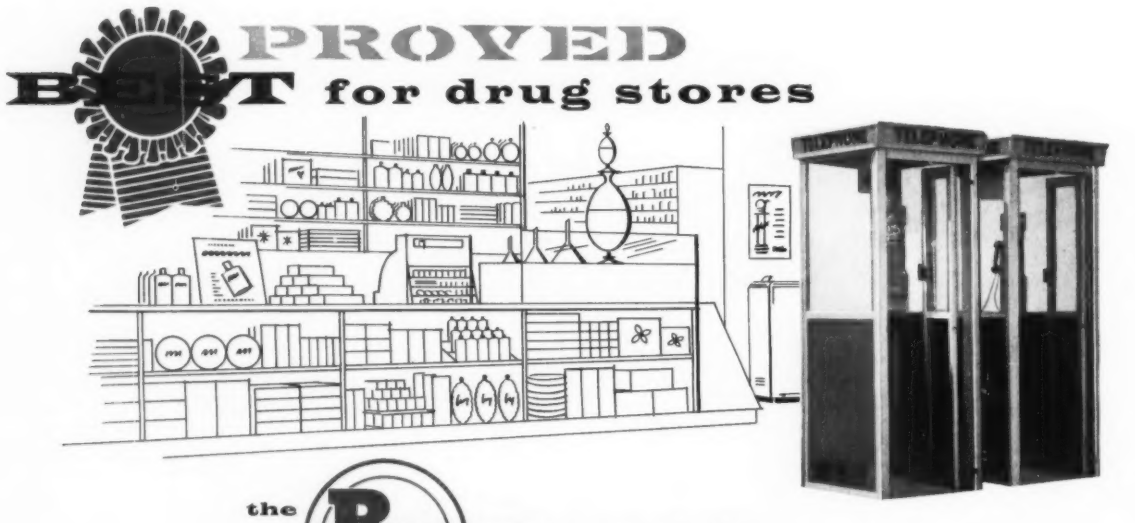
Without taking too much space here to review this British author's disenchantment with the British public ownership movement, it might be all summed up in the sub-title to the book itself, "The End of a Dogma." The author is very realistic, even though he systematically devastates all claims which the British Socialists have made to planning or efficiency in the nationalization of British utilities. It was inevitable because it was something the British Labor Party was bound and pledged to do, successfully or otherwise. The book shows that it has been very much *otherwise*. It is a dreary recital of deficits, of failure, and of deterioration in public service. The chief beneficiaries seem to have been employes. They have been coddled and placed in especially protected positions at the expense of the British consumers and the British taxpayers.

Yet, nationalization, by its nature, is almost irreversible; and Kelf-Cohen does not expect its repeal. The reference to nationalization being "almost irreversible" is prompted by the fact that the British iron and steel industries spent two years in the "death cell" while the House of Lords stalled the final execution. When the Churchill government came back to power in 1951, the Socialists eggs were unscrambled for the iron and steel industries. The public ownership statute was repealed in 1953. But the Laborites are still pledged to nationalize iron and steel whenever they get back in office, as well they might some day. So maybe we have not heard the end yet.

There is a lesson in this for public utility people on this side of the Atlantic. True, the British utility goose is cooked. But, the American utility goose is still kicking; even though the socialist fires are smoldering in the United States and even warming up in the Nation's Capital. Whether enough people can be persuaded, by the tragic waste of British blundering in nationalization, to avert a similar disaster here remains to be seen. Kelf-Cohen's book is at least a good monitor and deserves all the mileage true believers in private enterprise can give it.

SBT&T President Honored

Ben S. Gilmer, president of Southern Bell Telephone & Telegraph Co., was



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one of 14 leading Southerners named recently to the South's Hall of Fame for the Living. Nominations were announced by Hubert F. Lee, editor of *Dixie Business*, the sponsoring magazine.

AT&T's Annual Report Shows Earnings Improved in 1958

Bell System earnings were $14.01 a share of American Telephone & Telegraph Co. stock in 1958, AT&T President Frederick R. Kappel reported on Feb. 17 to nearly 1,620,000 share owners.

"Earnings improved last year for a number of reasons," he said in AT&T's annual report. "We were able to increase the efficiency of operations. The services and instruments we provide are increasingly attractive and they have been vigorously sold. Some of the telephone companies obtained much needed increases in rates."

The earnings were on 67,982,000 average shares outstanding, an increase of 4,171,000 from the average in the previous year. Per share earnings were $13.16 in 1956 and $13 in 1957.

"The sustained and broadening sales effort of thousands of Bell System employes was a key factor in enabling us to meet the problems of recession," Mr. Kappel said. "We had many improvements to offer. We sold them hard. This contributed greatly to service betterment—to revenues and earnings—and to telephone jobs."

The Bell System spent 2.2 billion dollars for construction in 1958. Expenditures of this magnitude are expected to continue, Mr. Kappel said.

"Relating all the equipment to all the service," he said, "our capital investment is about two and one-half times our annual revenue. As we continue to grow, we shall need more and more physical plant and large additional amounts of capital."

To widen the market for AT&T stock, he noted, the board of directors announced in December that it would propose a three-for-one stock split at the annual meeting of share owners in April. If the proposal is approved, the company expects to pay the first quarterly dividend on the split shares in July at an annual rate of $3.30 a share. Dividends of $9.00 a share were paid in 1958.

Mr. Kappel said that the improvement in earnings accomplished in recent years has been necessary to keep facilities and service growing and to support the research which is vital to the future. In some areas however, he said, low earnings still hamper the companies' ability to serve. The companies concerned are therefore continuing every effort to improve the earnings.

Taxes equal to $3.18 per telephone per month (on the average) were paid on Bell System service last year, the report said. The total was $2,033,000,000, including 550 million dollars in federal excise taxes paid directly by telephone users.

"We consider the 10 per cent excise tax unjust and discriminatory—in fact the telephone is the only household utility that is so taxed," Mr. Kappel said. "Yet proposals have been made which, if they become law, could make this tax a permanent part of both the federal and state tax structures. When tax laws are revised the telephone excise tax should be repealed—not perpetuated."

The AT&T report pointed out these gains in service:

The Bell System added nearly 2½ million telephones in 1958, to bring the total in service to 54.7 million.

Long distance conversations rose about 5 per cent.

Long distance dialing has increased and telephone users now dial one out

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CITY, STATE_____

of five calls straight through to the distant telephone.

Overseas conversations increased 11 per cent last year.

Service is now available to 125 countries and territories.

The market for world-wide telephone communication is growing, Mr. Kappel said. A second transatlantic cable will be laid this summer (the first went into service in 1956). A cable to Puerto Rico will go into service early next year.

Bell System research and development work last year was on a larger scale than ever before, Mr. Kappel added. The work included improved radio relay systems, cables, central office switching equipment and other changes unseen by the public.

In the making also are new telephone services and instruments for customers. Scheduled for production this year are a new, smaller telephone; a home communication system that permits one to answer the doorbell from any telephone in the house; and a new communication system for farms.

Telephone research and technology are also at work for the country's defense in many ways, the AT&T report emphasized. The Bell System has built a new network of telephone routes that bypass critical areas to insure that essential communications will be maintained in case of disaster.

Bell Laboratories has over-all responsibility for the design of Nike missile systems and is now designing a new anti-missile missile, Nike Zeus. Western Electric, the manufacturing and supply unit of the Bell System, produces guidance and control systems for Nike Hercules. Western and Bell Laboratories are also working to provide communications for a new ballistic missile early warning system (TELEPHONY, Feb. 7) now under construction in the far north.

The AT&T president also cited the growing importance of microwave radio relay facilities in providing telephone services. More than 30 per cent of the nearly 63 million miles of long distance channels, and two-thirds of the mileage added last year, are provided by radio relay systems. They provide all the new express routes and most of the other facilities which the Bell companies have built to bypass centers that are potential targets for enemy attack.

The third microwave radio relay route across the country was completed in January, 1959. Between Denver and Salt Lake City the Bell System has started to build another cross-country system of a new type which can handle 11,160 conversations at a time—more than three times as many as the type now in use.

Obituary

STANFORD MCFARLAND SHERMAN, 49, died on Feb. 16 in Los Altos, Cal.

Mr. Sherman had been a partner in Sherman, Mitchell & Co., distributors of electrical equipment since 1957.

He started his career in the telephone industry in 1934, when he began working for Automatic Electric Co. He held various positions with that company and was supply sales manager at the time he left it in 1946.

S. M. SHERMAN

From 1946 to 1952, he was western district manager for American Crossarm & Conduit Co.

After leaving that company, he held the position of northwest district manager for Reliable Electric Co. and Whitney-Blake Co.

Mr. Sherman began his business career in the financial field in 1927 starting with Lee Higginson Investment Co. after his graduation from New Trier High School in Winnetka, Ill.

Before going to Automatic Electric, he also was employed, in 1932, by Household Finance Co. of Chicago.

Mr. Sherman was a member of the Independent Telephone Pioneer Association.

Survivors include his wife, Alice James Sherman; his son, James, a freshman at the University of Arizona; sister, Katherine Benning of Lincoln Park, N. J.; and parents, Mr. and Mrs. Louis Sherman of Evanston.

New England T&T Makes Executive Changes

Frederick A. Cosgrove has been elected executive vice president of the New England Telephone & Telegraph Co., it was reported on Feb. 19. He was formerly vice president in charge

of operations, and will be succeeded in the latter post by Albert C. Palmer, previously vice president in charge of personnel.

Appointments announced at the same time were Cornelius W. Owens as a vice president to succeed Mr. Palmer in charge of personnel, and Hugh W. MacDonald as a vice president, who will continue also as general manager for the company in Massachusetts.

Housing Specialist Urges Pre-Wiring Telephone Plan

A Louisiana State University Agricultural Extension Service housing specialist, Mrs. Bertha Bryson, has been advising home demonstration agents that when planning to remodel or build a house, it is wise to give special attention to pre-wiring, or placing of telephone wires in the walls during construction.

She also has been urging installation of several outlets to serve the needs of a growing family, plug-in outlets for outdoor living areas, and such features as the illuminated dial telephone, a room-to-room intercommunication system, and the loud-ringing telephone bell.

The Measure of Greatness

"Nothing is great but the inexhaustible wealth of nature."—EMERSON.

Theodore F. Brophy has been elected vice president and general counsel of General Telephone Corp., Donald C. Power, president, has announced. Mr. Brophy joined General in January, 1958. He was formerly general counsel for The Lummus Co. and associated with Root, Ballantine, Bushby, Palmer & Wood in New York City. He served in the U. S. Navy submarine service in World War II.

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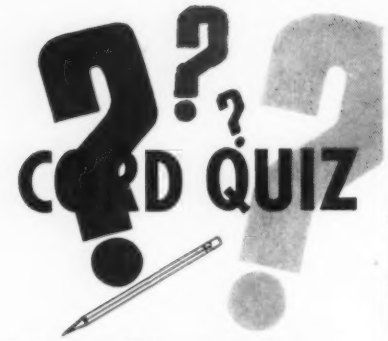

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Time Savers In Handling Company Correspondence

By WILLIAM J. MILFORD

SCARCELY A day passes without the average telephone company executive facing one of his biggest, time-consuming tasks, i.e., business letter writing. While many other equally important chores clamor for attention, time must be devoted to correspondence which is often a tedious task.

Handling the office correspondence need never be such a burden or a time waster. The millions of words written on good business letter writing have brought to light just about every step the average executive should follow to do the job correctly.

But, not enough has been written on how to handle the task itself in the minimum amount of time without sacrificing anything which contributes to its being done correctly.

We have personally interviewed about 100 executives in all parts of the country inquiring how they handle their mail. From the answers received are these suggestions which can enable any other executive in any spot, large or small, to handle his correspondence with a minimum of time consumption every business day.

Three time savers were mentioned in almost every case. They should be fixed in one's mind and kept there—perhaps jotted on a note pad and left in plain sight on the desk all the time. They are: (1) Be brief; (2) Be friendly; (3) Be firm.

Be sure all the data you need to handle the correspondence is at hand first, is another suggestion mentioned often. When you handle each separate problem as it arises, you are not only wasting your own time, but everybody else's as well.

You will also find that setting up everything in advance will automatically reveal how two or more letters in the day's stack can often be answered with the same reply or with the same paragraphs changed around from one to the other to reduce dictation and transcribing time.

More and more use of standard paragraphs will follow from such a practice.

Many problems of an identical nature come up day after day. Dictating a new and separate letter to handle each and every one of them is a sheer waste of time when they can be handled equally well with a number of standard paragraphs already dictated and kept in a notebook for that purpose by one's secretary.

Each paragraph is given a number or title and all the executive has to do is tell his secretary to "insert paragraph seven" and a 15-minute chore can be reduced to a few seconds.

Wide spread use of such standard paragraphs can pay off for the executive's office in a number of other ways. Here are some mentioned by the men contacted in our survey:

(1) Better work can be done and better results achieved every day.

(2) More work can be done not only by yourself, but by your secretary or stenographer.

(3) Better control of the work is secured.

(4) It is much easier to train new stenographers in an office when such a system has been previously set up and used.

(5) The task of checking carbon copies is greatly reduced.

Finding the best and speediest way of answering letters in one's individual office is another step suggested. Each office and each executive routine has its individual characteristics. Finding the best pattern to fit these circumstances can always save time. Here are some worthy of consideration since they are all time tested and proven:

(1) Dictate the entire letter to the machine or stenographer without permitting interruption or handling other matters on the side.

(2) Dictate certain personal paragraphs and the number of form paragraphs to round out each letter.

(3) Answer as many routine letters with printed forms as it is possible to do.

(4) Jot down the gist of the proper answer and let the well-trained secretary shape the communication.

(5) Make certain you have an intelligent secretary and turn over to her every letter you possibly can for her to handle on her own.

It also pays to take time to go through the mail first and organize it carefully before answering any letters. Too often we look on this as wasted time with the thought that we can sort as we go along.

Actually, much more time is consumed in this manner than in the one suggested, for a proper sorting per-

mits any executive to handle even a heavy volume of correspondence in groups of related topics where it will be obvious one answer can handle a half dozen or more letters.

Even the physical time consumed in telling one's secretary what to do can be reduced by such advance organization. For instance, "— These three can be handled by —," "— These four take this answer —," etc., is much swifter than repeating the instructions on each communication as it comes up in turn.

Picking the right time of the business day in which to handle mail is also important. Where a number of mails come in, it is much better to set the time after all are in, rather than to take care of each letter as it arrives with the individual mail load. Seldom, if ever, is any matter so pressing that it cannot wait for an answer for a few hours, and, in most cases, such letters may not be dispatched at the post office until one set time, no matter how many times a day we drop them into the mail chute.

Good office time capable of being put to better use can also be saved by the elimination of re-typing of communications, etc., on the part of the secretary or stenographer (very often this calls for additional wasted time on the part of the executive, too, in handling such corrections). Mistakes and errors at the typewriter on the part of a secretary occur most frequently through incorrect touch, lack of concentration, lack of interest in the work itself, physical defects, disturbing elements or conditions in the office, and the lack of proper training.

Few are the executives who cannot find ample opportunity for use of additional time in each business day. Taking these steps to cut down on time wasted in handling business correspondence is one sure way to secure those needed extra moments.

Report New Telephone Book Issued for Moscow

Moscow is reported to have put out a new telephone book, its first since 1954.

The first volume in the 20,000-copy edition contains office numbers only, mostly those of Russian government offices.

There are no private telephone numbers in the new book. However, officials say that a second volume will be published. Presumably, this will include the private numbers.

Moscow subscribers do not receive a free copy of the directory. It is available at book stores where it is sold on a first-come first-served basis.

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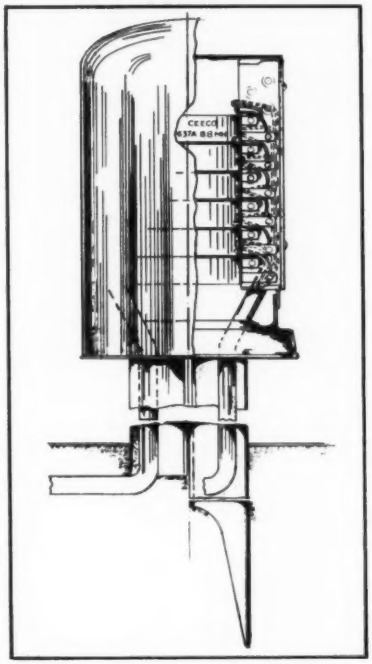
CEECO PARKWAY PEDESTAL TERMINALS FOR LOADING DIRECT EARTH BURIAL PLASTIC CABLES
Using Type C637A (88MH) or Type C637B (44MH) Coils



Lug-12 Terminal and Pedestal with C637A-(88MH) loading coils or C637B(44MH) loading coils

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LOAD ONLY NEEDED PAIRS—ADD TO FULL CAPACITY AS REQUIRED

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★STRONG
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SIDE PLATES GIVE NOMINAL AIR GAP TYPE PROTECTION AT EACH TERMINAL STUD END

CEECO Parkway Pedestal Loading Terminals for plastic cable provide accessibility to all cable pairs, for testing, splicing, cross connecting, and buried drop wire distribution.

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CATALOG NUMBER	DESCRIPTION	TOTAL NUMBER PAIRS HIGH	TOTAL NUMBER COILS	INSIDE HOOD DIAMETER	APPROXIMATE HEIGHT OF HOOD
LUG-12	TERMINAL-PEDESTAL AND HOOD (NO COILS)	6	12	6 ID	11"
LUG-16	TERMINAL-PEDESTAL AND HOOD (NO COILS)	8	16	6 ID	14"
LUG-28	TERMINAL-PEDESTAL AND HOOD (NO COILS)	14	28	6 ID	21½"
LUG-52	TERMINAL-PEDESTAL AND HOOD (NO COILS)	26	52	6 ID	32¾"

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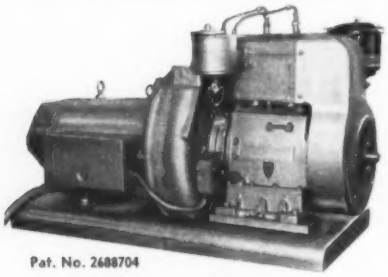

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North Electric Announces Southern Sales Appointees

D. F. Snyder, sales manager, North Electric Co., announces the promotion of M. J. Stanley to staff sales engineer for Florida, Georgia, Alabama, North and South Carolina, Virginia, Kentucky, and Tennessee.

M. J. STANLEY

Mr. Stanley joined North as an engineer in 1947. Progressing through engineering and engineering-sales sections of the company, he became, for several years, North's regional manager for the Minneapolis area. In 1957 he was appointed a project engineer for crossbar, a position he held until this announcement.

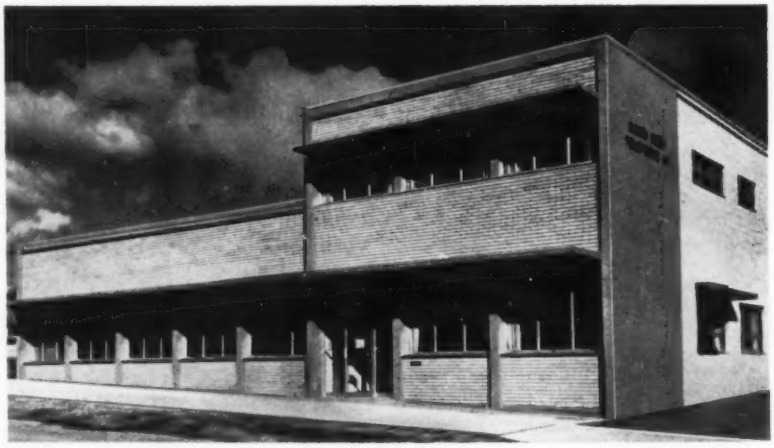
The appointment of J. T. Kerley as regional salesman for Florida, Alabama, Georgia, and South Carolina is also announced. With North since 1953, Mr. Kerley moves from Clinton, Ky., to Tallahassee, Fla.

J. T. KERLEY

Secode Corp. Appoints Control Systems Head

S. Dixon Burton has been appointed head of the control systems department of Secode Corp. with headquarters in San Francisco. He will be responsible for expanding the firm's activities in the field of industrial and military electronic control systems.

To accept his new post, Burton left Applied Science Corp. of Princeton in Princeton, N. J. where he served for three years as systems and application engineer in the industrial products department. Previously, he was systems



Pedestrians in Prince George, British Columbia, are treated to an eye-catching sight each time they pass Northwest Telephone Co.'s ultra-modern telephone exchange. The building features "a sidewalk view of switching equipment racks" through picture windows on the left side of the main floor. Sightseers are able to view the switching apparatus used by Northwest to serve its more than 4500 subscribers in Prince George. Northwest Telephone Co., with headquarters in Vancouver, is a part of the General Telephone System and an associate of the British Columbia Telephone Co.

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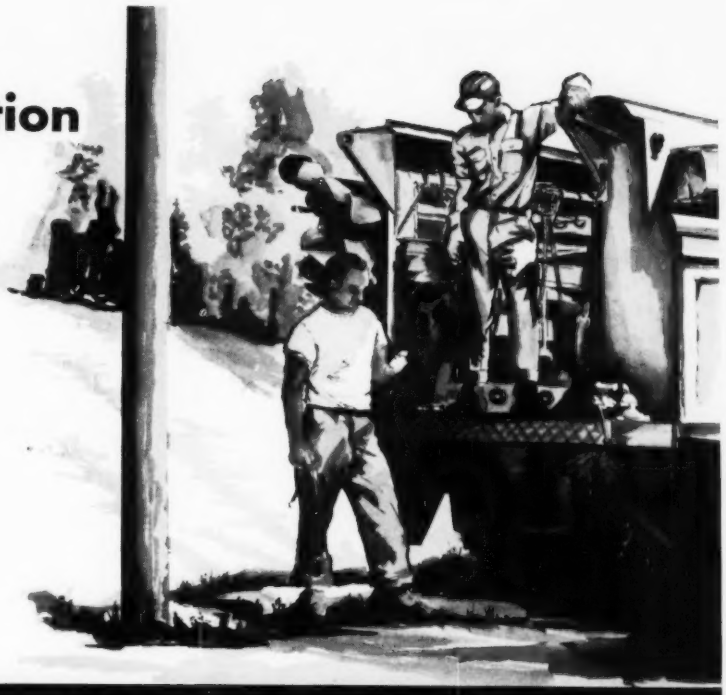

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We consider the unique aluminized coating of these wires to be superior to Class C galvanizing—in longer service life under virtually all conditions. Yet, with all their advantages, you can buy them at *much lower prices!*

***For full details,** see your Telephone Supply Distributor —or write our Monessen, Pennsylvania, office.*

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engineer at Hammarlund Mfg. Corp., in New York City. Mr. Burton was associated with Bendix Radio Division of Bendix Aviation Corp. for 14 years.

Secode Corp. manufactures and develops selective control devices and systems widely used in communications and industrial applications. The firm recently developed apparatus which enables extension of dial telephone service to vehicles.

W. D. Holcomb Will Manage Cook Electric Division

William D. Holcomb has assumed the duties of manager, Wirecom division, Cook Electric Co., Chicago. The Wirecom division has been active in the manufacture of communications equipment for over 60 years.

W. D. HOLCOMB

Mr. Holcomb has a background of more than 20 years in production engineering, metallurgy and sales management, and has been associated with Bridgeport Brass Co. and Reliable Electric Co.

He is a 1938 graduate of Worcester Polytechnic Institute, Worcester, Mass., and holds a B.S. degree in chemical engineering. He is an associate member of the American Institute of Electrical Engineers.

Poland Plans to Add 1,000 Dial Exchanges

Poland has plans for adding over 1,000 new automatic exchanges over the five-year period 1959-1965, it was reported on Feb. 2.

When installations are completed, the country will have about 418,000 new telephones in automatic exchanges and 25,000 in manually operated exchanges.

According to the Polish press, the country now has 1.45 telephones per thousand population.

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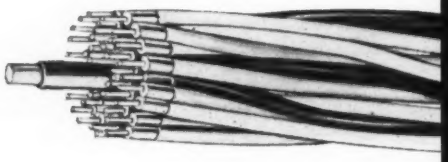

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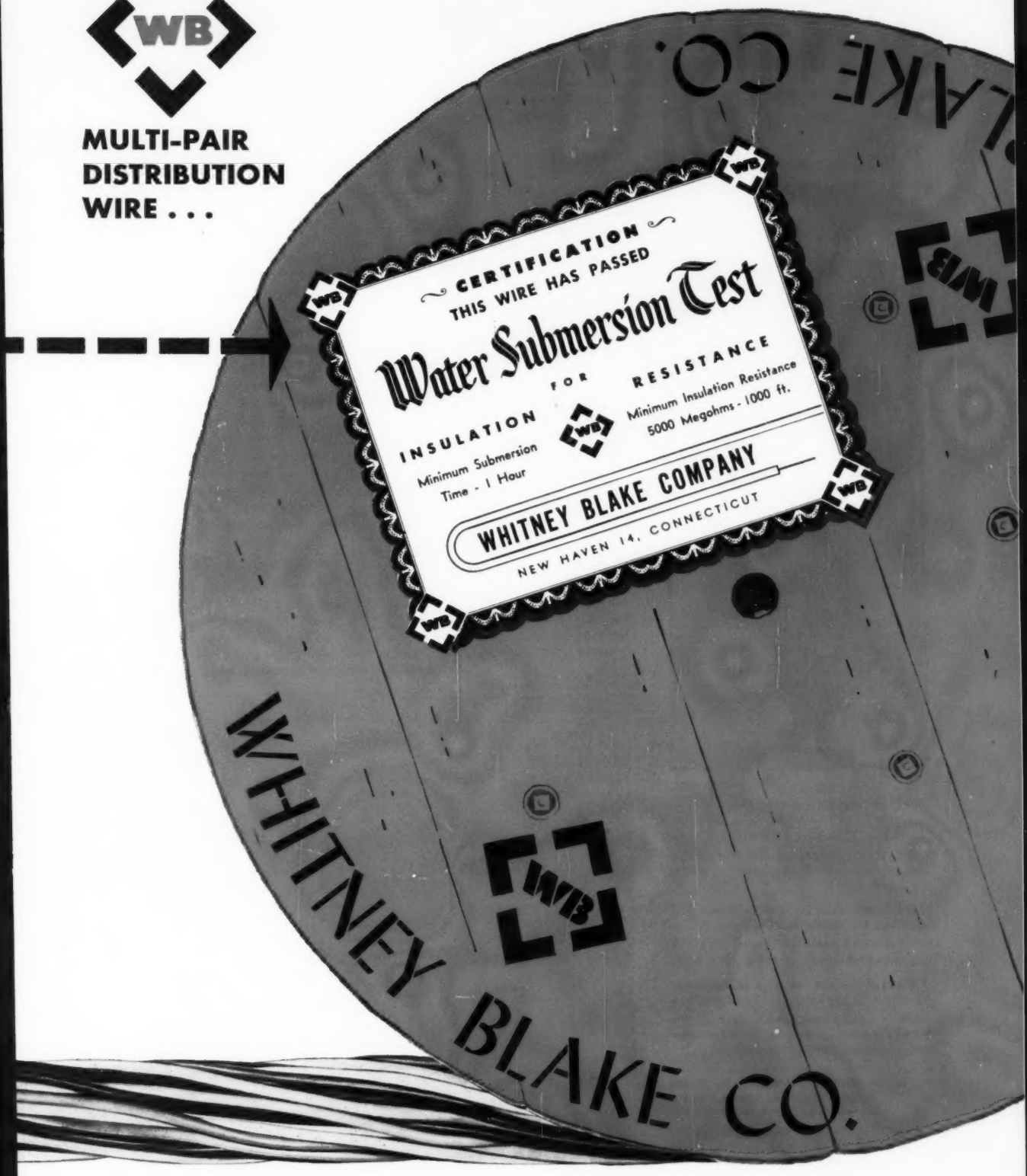

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Dierks Ark. Treating Plant Adds Sixth Cylinder

The recent addition of Cylinder No. 6 to the facilities of Dierks Forests, Inc. treating plant near DeQueen, Ark. makes this the largest plant of its kind in this country, according to the company.

Each cylinder is 8 feet in diameter, 112 feet long. The total displacement of the six cylinders adds up to 33,200 cubic feet.

The plant started operation in mid-1948 with a single cylinder. From time to time as the business expanded another cylinder was added. The plant produces pressure-treated utility poles, construction poles, fence posts, lumber, timbers, cross-ties and piling. Treatments available include creosote, creosote-petroleum and pentachlorophenol.

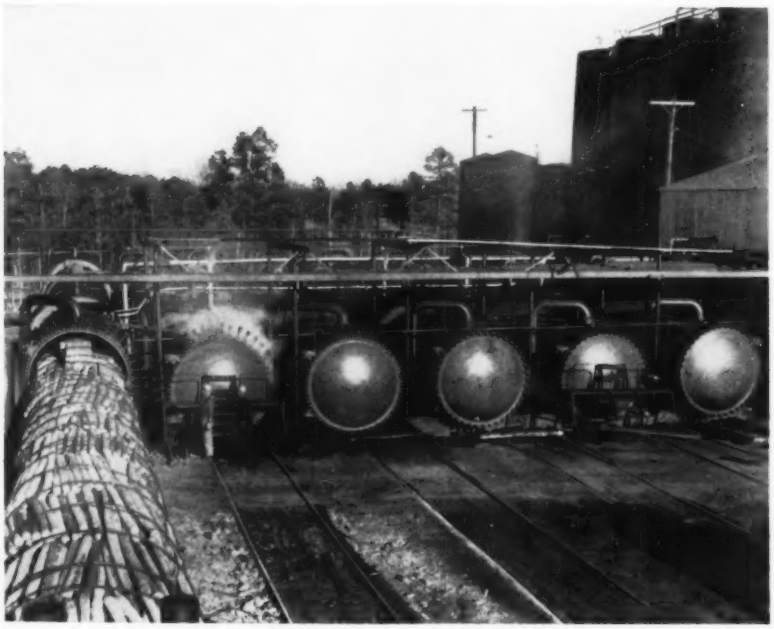
Equipment used includes two Cambio Debarkers with a feed speed of 115 feet per minute which will take any size posts from 2 to 10 inches in diameter. Utility poles are handled on two large Nelson Peelers. Construction poles are peeled on two Nelson Junior Knife Peelers and the Cambio Debarkers.

Total area of the plant is 200 acres of which 35 acres are utilized as storage space where peeled posts and poles are air-seasoned before going through the pressure-treating process. Green fence posts and poles are given a pretreatment of chemicals that are a by-product in the manufacture of chlorinated phenols. This is a dip treatment in a solution which is toxic, anti-stain and decay-resistant and helps to prevent fungi growth during the drying process, the company states; it also minimizes the tendency for the wood to check and split during the drying period. Posts are stored on the drying yard in steel-strapped bundles which are tagged, dated, and regularly inspected during the seasoning process.

Dierks states that in the pole framing yard, utility poles are bored and gained to the buyer's specifications with modern power tools. Here the poles are branded with the Dierks name, year of manufacture, species of wood, type of treatment, length, classification and the buyer's symbol.

When the wood enters the cylinders the processing or preservative treatment begins. Partially seasoned or unseasoned material is first given a steam and vacuum treatment to better prepare the wood for more even distribution of preservatives and penetration. The process consists of steam treatment which stores latent heat that is used in the removal of excess moisture from the wood.

The steaming period is followed by creation of a high vacuum in the cylinder to further aid in moisture removal from the wood, according to the company. Completely seasoned material, while usually given a light steam bath



A sixth pressure-treating cylinder recently was added at the Dierks Forests, Inc., plant near DeQueen, Ark. Each cylinder has an 8-foot diameter and 112-foot length. Treatments available include creosote, creosote-petroleum and pentachlorophenol.

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Service conditions demand that guy, messenger and overhead ground wire possess the strength, ductility and corrosion resistance that will assure safe installation and long trouble-free service life.

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CF&I Galvanized Steel Strand meets or exceeds ASTM Specifications A-122 or A-363. If you prefer, it can be made to your specifications in seven- or three-wire constructions. Your nearby CF&I representative or local electrical distributor will give you complete details. Why not call him today?

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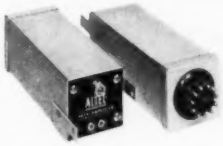


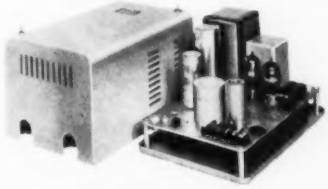
447A TRANSISTOR AMPLIFIER
Telephone Repeater Type

Directly interchangeable with vacuum tube repeaters; dimensions are identical. Requires only 24 - 48 volts. Eliminates need for 130v supply.

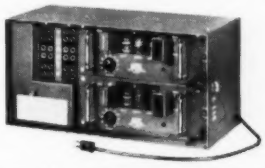
SPECIFICATIONS:
Type: Repeater Amplifier (transistorized) • Gain: 37 db from and into 600 ohm loads • Power Output: +18 dbm (at +10 dbm distortion is 1.5%, 300-3000 cps) • Frequency Response: —1 db at 200 and 5000 cps referred to 1000 cps • Input Impedance: 600 ohms • Output Impedance: 600 ohms • Output Noise Level: —70 dbm • Controls: Input volume control which varies gain from —2 db to maximum gain • Power Required: 17 - 24 v (50 ma @ 20 volts) • Transistors: 1—2N191, 1—2N188A • Dimensions: 1¾" x 1¾" x 6" • Color: Cadmium plate with dichromate finish • Weight: 14 oz. • Mounting: 11 pin Amphenol 86 CPN plug • Monitor Tap: Auxiliary output winding 11 db below 600 ohm winding available at test jacks on front panel and at connector pins at rear of unit • Accessories: Panel for rack mounting 10 repeaters; Rack mounting power supply capable of energizing 100 repeaters; Equalizer; Panel for mounting up to 10 equalizers; Assembly for mounting a 447A in 105B apparatus box.

444B AMPLIFIER COMPRESSION TYPE

Compression, attack and recovery times are fixed quantities providing optimum performance for message use.



SPECIFICATIONS:
Type: Compressor Amplifier • Gain: 600 ohm input: 70 db • Bridging input: 57 db bridging 600 ohm line • Maximum Compression: 35 db change in input results in 15 db change in output • Power Output: 34 dbm at 30 db compression; 35 dbm with rectifier tube removed • Frequency Response: —2 db at 100 and 3000 cps relative to 1000 cps; More than 10 db down at 10,000 cps • Input Impedance: 600 ohms balanced and 12,000 ohms balanced for bridging • Source Impedance: 600 ohms • Load Impedance: 4 and 600 ohms • Noise Level: 80 db below rated output; —115 dbm equivalent input noise • Power Supply: 117 volts, 60 cps, 30 watts • Tubes: 1—6BC8, 1—6AL5, 2—12BY7A • Dimensions: 9" x 6" x 5" • Weight: 7½ lbs. • Attack Time: 50 milliseconds • Recovery Time: 1 second for 63% recovery • Harmonic Distortion: At 33 dbm output, less than 5%, 200 - 4000 cps; At 30 dbm output, less than 2%, 200 - 4000 cps.



S-17B PROGRAM AMPLIFIER SYSTEM

Cabinet houses two program-quality 437B amplifiers capable of multiple tandem operation, two 17224 equalizers, and two jack fields to facilitate testing, equalizing, and monitoring. Each amplifier contains its own AC power supply and mounts in the cabinet independently on a plug-in basis for easy replacement and centralized maintenance.

SPECIFICATIONS:
Output Power: +24 dbm • Distortion: not over ½% THD (30 - 15,000 CPS at +24 dbm) • Gain: at least 44 db; adjustable to minimum of 8 db • Gain adjustment: 2 db steps and 1½ db vernier • Frequency response: ±1 db, 20 - 20,000 cps • Equiv. input noise: —115 dbm • Input impedance (internal): 150/600 ohms ±5% • Output impedance (internal): 150/600 ohms ±5% as measured at output of the bridge • Longitudinal balance of input circuit and output circuit with 600 ohm connection: 55 to 60 db at 40 and 15,000 cps; 70 db at 1000 cps • Tubes: 1—12AY7, 2—12BY7A • Electrolytic condensers: Sprague 17D or equivalent • Transformer insulation: 1500 volt insulation between primary and secondary windings • Impendance change simply accomplished by reversing the impedance plug. Occupies 9⅜" of 19" rack space.

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for sterilization does not require the steam and vacuum process.

After the steam and vacuum step is completed, air is introduced into the cylinder, ranging from 40-80 pounds per square inch, depending upon the net retention of the preservative required. This is referred to as "Initial Air."

The next step is the introduction of the heated preservative into the cylinder. The air is maintained at a constant pressure per square inch after the preservative is introduced and as the air is vented from the cylinder.

After the cylinder is completely filled with preservative, a pressure up to 200 pounds per square inch is created and maintained for the duration of the pressure period. Upon completion of the pressure period the excess oil is removed from the cylinder. The last step is known as "Final Vacuum Process." The purpose of this final vacuum is to clean up the surface of the wood for cleanliness in use and handling, Dierks says.

Dierks Forests, Inc. states it pioneered the use of aluminum trade-mark tags which are attached to each fence post and construction pole.

Timber stock for the plant comes mostly from the company's timberlands in Arkansas and Oklahoma.

The general offices of Dierks Forests, Inc. are located at Hot Springs, Ark., where William J. Butler is in charge of sales. The plant is under the supervision of Murray M. Neely.

Announce Jackson Elected An ITT Vice President

The election of John T. Jackson as a vice president of International Telephone & Telegraph Corp. was announced on Feb. 19, by Edmond H. Leavey, president. Mr. Jackson will be deputy group executive to Fred M. Farwell, executive vice president — U. S. group.

Mr. Jackson had been assistant to the president, director of planning and organization, and an assistant vice president of ITT since 1956. He joined the ITT system in 1953 as assistant to the president of Federal Telecommunication Laboratories, now ITT Laboratories, Nutley, N. J., and head of the organization, methods and planning office. Previously, he had been vice president and a director of George S. Armstrong & Co., industrial engineers and management consultants.

A native of Milwaukee, Wis., he was graduated from Cornell University in 1942 with the degree of bachelor of science in administrative engineering.

He is a member of the American Society of Mechanical Engineers. An

Army veteran of World War II, he served four years and was honorably discharged with the rank of major. He is a graduate of the Command and General Staff School.

Named to Head Stromberg Telecommunication Assembly

N. C. Vandagriff has been appointed superintendent of the telecommunication assembly section of General Dynamics Corp.'s Stromberg-Carlson Division, according to a recent announcement by Howard G. Strassner, manager of telecommunication manufacturing.

N. C. VANDAGRIFF

In his new position, Mr. Vandagriff will have charge of all assembly work in Stromberg-Carlson's telecommunication division. He will have responsibility for the assembly of such telecommunication products as telephone instruments, central office systems, carrier, and multiplex equipment.

Mr. Vandagriff joined Stromberg-Carlson in 1952 when the company purchased the Southern Electric & Transmission Co. of Dallas, Tex. He had joined the latter company in 1941 as a shop worker and had advanced through supervisory positions to become foreman and later plant superintendent in Dallas. He was named acting manager of that plant prior to its being moved to Rochester.

In 1955, Mr. Vandagriff came to Rochester as assistant to the superintendent of the assembly section of the telecommunication division. He later was named assistant superintendent, and in his new position succeeds William F. Strohmeier, who retired.

During World War II, Mr. Vandagriff served in the U. S. Navy. His four-year tour of duty was with the amphibious force in the European thea-

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ter. On his discharge in 1945 he was a radio man first class. Before the war he attended Southern Methodist University where he completed a special course in radio engineering.

M. G. Gnau To Direct AE Sales Training

Automatic Electric Sales Corp. has announced the appointment of Marion G. Gnau to the newly created position of director of sales training.

M. G. GNAU

Mr. Gnau will be in charge of the corporation's training program for recent college graduates who are being pointed toward assignments as field sales representatives.

He will also organize and coordinate the company's general sales meetings, and conduct training activities in other areas of sales operations.

Formerly Automatic's sales representative in St. Louis, Mr. Gnau has been with the company for 24 years. He will be headquartered in the home office at Northlake, Ill.

Gladwin Plastics Appoints Western Representative

Gladwin Plastics, Inc., announces the appointment of Bruce Nicholson, P.O. Box 3094, Denver, Colo., as sales representative to the telephone industry in the western states. The announcement is made by Ralph F. Chambers, executive vice president and general manager of Gladwin.

Mr. Nicholson will service the Gladwin accounts in California, Oregon, Washington, Idaho, Utah, Arizona, New Mexico, Colorado, Wyoming, Montana, in British Columbia and Alberta, Can., and in the El Paso, Tex. area.

Mr. Nicholson is a graduate of Trinity College, Hartford, Conn., and has a B.S. degree in chemistry. He joined the Borden Co. and was in export merchandising for several years. He spent three years with the Pepsi Cola Co. promoting sales in Peru and Panama. On returning to America in 1954, he joined Southeastern Plastics Sales Co. in Atlanta as merchandising manager in the southeastern states.

Mr. Chambers says that Gladwin Plastics, Inc. specializes in the development and production of fabricated plastics items for the public utilities and the lighting industry throughout North America. Most of their items are designed to help create new sales and markets for telephone service. They are the makers of the Boothette, a small public telephone enclosure, and the mark sense meter reader card box, along with hundreds of other items distributed during the past 12 years.

Two Lenkurt International Managers Are Announced

Rui R. Lopes and Robert F. Gellerman have been promoted to new positions with Lenkurt International Corp.

Mr. Lopes is now marketing manager of Lenkurt International, which serves users of the firm's long-distance telephone, telegraph, and data transmission systems outside the U. S., Canada, and Mexico.

He joined Lenkurt's export staff in 1956, holding positions as engineer translator, sales engineer, and senior staff engineer prior to his promotion.

Before leaving his native Portugal, where he received his electrical engineering degree, he was with the Portuguese Ministry of Communications for five years.

Mr. Gellerman will manage a new branch of Lenkurt International scheduled to open this spring in San Salvador, capital city of El Salvador. The branch will serve Central American users of Lenkurt communications systems.

He joined Lenkurt as an engineering representative after receiving his B.S.E.E. degree from the University of Minnesota in 1956.

Actions Speak

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